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3dcreative

Issue 087 November 2012

Ken Toney
3D Character Artist

Yitio Itlanacha
Project Overview
by Daniil Alikov

Gallery
Gallery - 10 of the best images from around the world!

Cover image by Andrew Hickinbottom

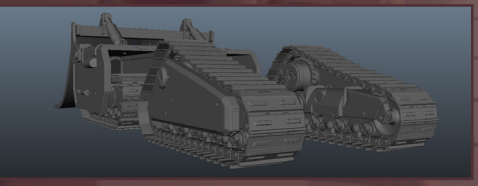
NEW!

ANDREW HICKINBOTTOM'S
WORKSHOP
FEMALE PIN-UP



The Master of pin-up characters **Andrew Hickinbottom** kicks off his new three part 3ds Max Female Character Creation series.

ZBrush Tribal Creature
Borislav Kechashki brings to life his fantastic tribal creature in the second part of our ZBrush Quadrapeds tutorial series .



Beginner's Guide to Modeling Futuristic Vehicles
Arturo Garcia (3dsmax) and **Renato Gonzalez Aguilante** (Maya) continue the modeling process in the next chapter of our vehicle based series.



The Submarine Pen - Building Objects
Andrew Finch brings us the fifth installement of his Unreal Games Engine Environment series, this month focusing on building and placing objects.



Editorial

Welcome to the November issue of 3DCreative! I hope everyone had a great Halloween; if you haven't already had enough treats, we have plenty more for you this month with our continually inspiring ongoing tutorial series and some awesome new ones!

This month we bring you part one of a brilliant new tutorial series, by Andrew Hickinbottom, a talented and experienced character modeler, with a penchant for stylized pin-up girls. In this series Andrew will cover modeling, UV'ing, texturing, lighting, creating the background and post-production. Andrew kicks things off in this chapter by talking us through the modeling of his character 'Olivia', who beautifully graces the cover.

We speed into the second installment of our Beginner's Guide to Modeling Vehicles tutorial series, where our two talented artists will be using the 2D concept and technical drawings provided, to talk us through a step-by-step guide to turning this information into an accurate and exciting 3D model. While Renato Gonzalez Aguilante illustrates the process in Maya, Arturo Garcia continues modeling in 3ds Max.

In this issue we reach the fifth part of Andrew Finch's tutorial series in which he is guiding us through the creation of an environment built in UDK. In the last chapter Andrew illustrated how to start populating the environment, and he continues to demonstrate this as he moves towards finalizing the environment.

We continue with our new series, ZBrush Quadrapeds, with the second chapter being brought to you by Borislav Kerchashki. So much can be accomplished with this impressive software, meaning the possibilities are endless! With imagination as his only limit, Borislav has used the creative freedom to the fullest as he demonstrates how he created the organic forms of his stunning tribal quadraped.

In this month's Making Of Danill Alikov demonstrates how he created his image Yitio Itlanacha, which you may remember from the August issue's gallery. He talks through his process of making the elderly alien in ZBrush, from the initial concept stage, through to texturing and lighting.

On top of all that we talk to talented character artist Ken Toney in this month's interview, and we also have our usual stunning gallery featuring work by Matthew Kean, Aeryn Davies, Alfonso Annarumma and many more!

Contents

What's in this month?



Ken Toney
Interview - 3D Character Artist



The Gallery
10 of the Best 3D Artworks



Futuristic Vehicles
3ds Max & Maya - Chapter 2



Olivia - Female Character
Chapter 1: Modeling



The Submarine Box
Chapter 5: Building Objects and Placement



ZBrush Quadrapeds
Chapter 2: Tribal Creature



"Yitio Itlanacha"
Project Overview by Daniil Alikov



Sample Chapter
Digital Art Masters: Volume 7 - Etienne Jabbour

079

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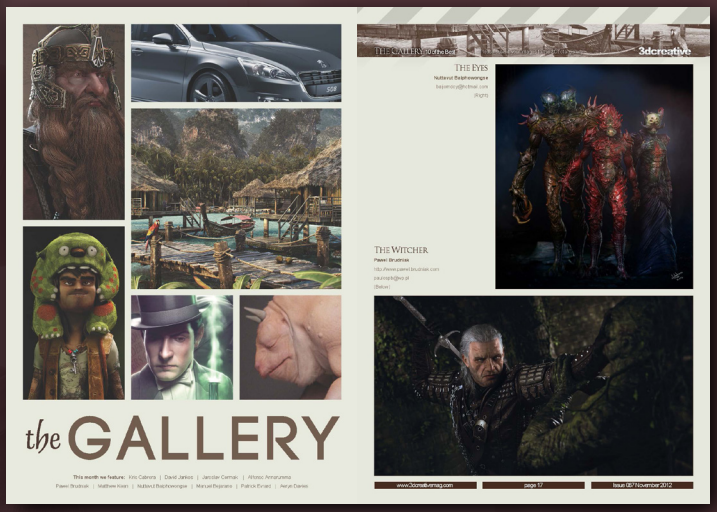


Gallery Image by Pawel Brudniak



Get the most out of your Magazine!

If you're having problems viewing the double-page spreads that we feature in this magazine, follow this handy little guide on how to set up your PDF reader!







Setting up your PDF reader

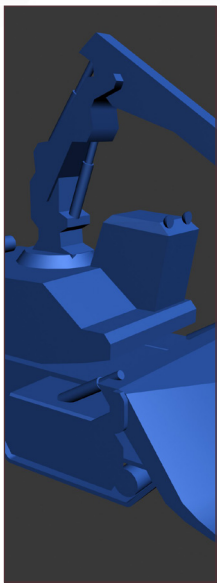
For optimum viewing of the magazine, it is recommended that you have the latest Acrobat Reader installed. You can download it for free, here: DOWNLOAD!

To view the many double-page spreads featured in 3DCreative magazine, you can set the reader to display 'two-up', which will show double-page spreads as one large landscape image:

1. Open the magazine in Reader;
2. Go to the View menu, then Page Display;
3. Select Two-up Continuous, making sure that Show Cover Page is also selected.
That's it!

Contributing Artists

Every month artists from around the world contribute to 3DCreative, and you can find out a little more about them right here! If you'd like to get involved in the 3DCreative magazine, please contact: simon@3dtotal.com



Arturo Garcia



Arturo Garcia is a freelancer living in Mexico, with 2 years experience in modelling cars. He uses 3ds Max software, and his goal is to make models become as real as possible – even confusing them with what *is* real!

http://dessga.cgsociety.org/gallery

dessga@yahoo.com.mx

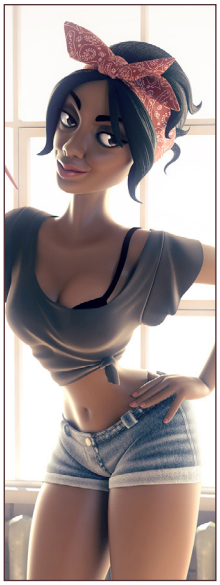


Andrew Hickinbottom

Andrew Hickinbottom is an experienced character modeler who takes great influence from 2D artistry, pinup art and cartoons. Andrew is currently working as a freelance character modeler after working full-time at various small studios for over 10 years.

www.andrewhickinbottom.com

andyh3d@gmail.com





Andrew Finch



Aged 30 and living in the great city of Birmingham, in the U.K. He has a degree in 3D Animation which inspired his passion for environment art. He now works as an environment artist at Codemasters. He says, "Working in the games industry is exciting: you never know what the next project will be and there's always something new to learn. This helps to keep you creative and grow as an artist." afinchy@googlemail.com

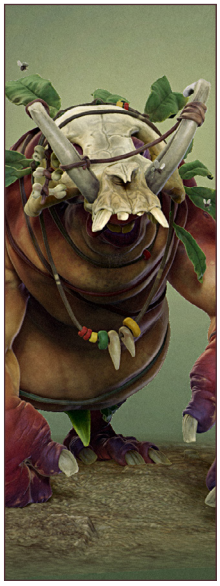


Borislav Kechashki

Borislav Kechashki lives in Sofia, Bulgaria where he graduated from his architecture degree a year ago. After working for more than 3 years as an environment artist in a small game studio, he is currently working as a 3d character artist at Ubisoft Sofia.

http://galero.cghub.com/

b.kechashki@gmail.com



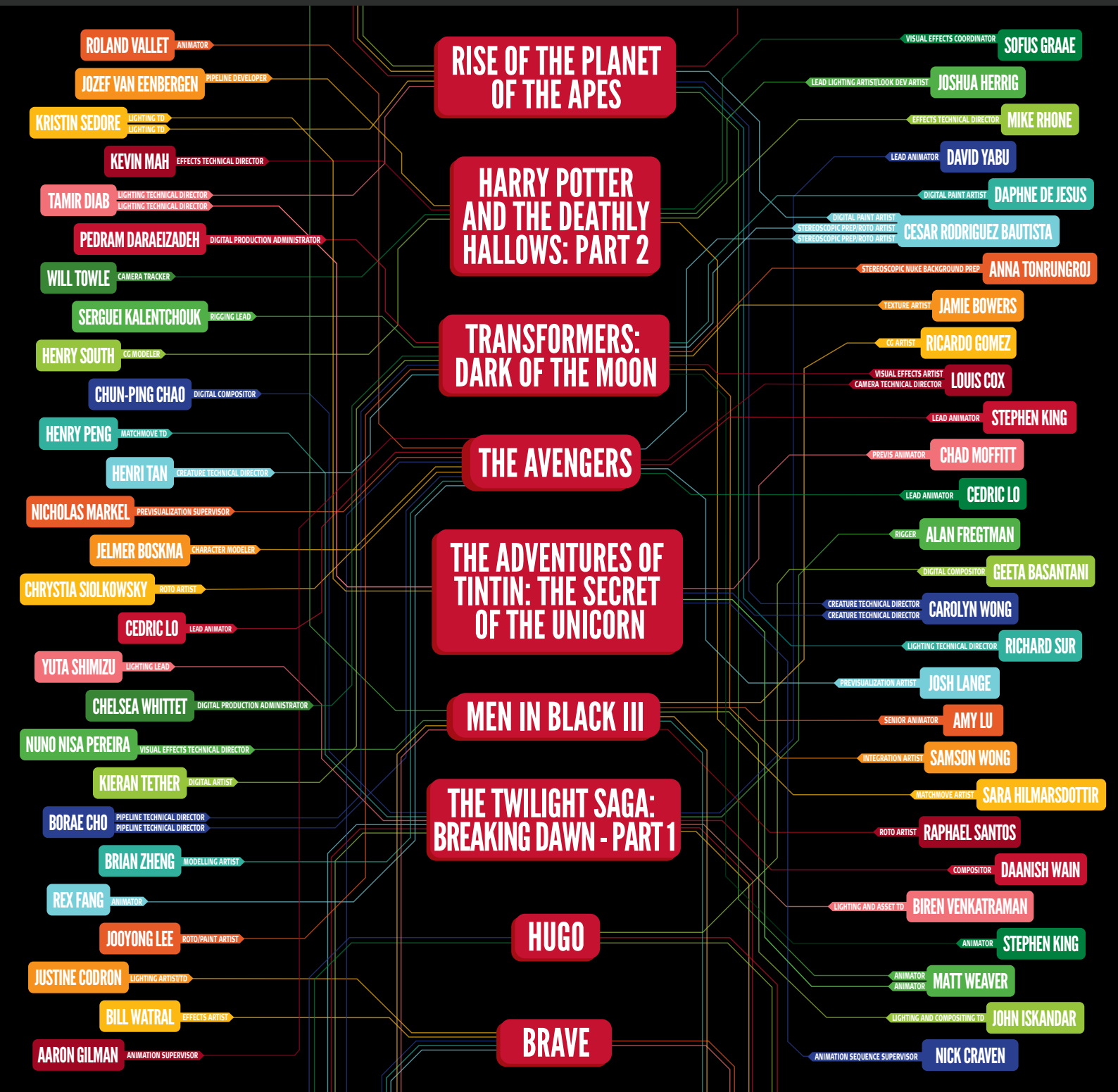


Gallery Image by Matthew Kean

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INTERVIEW WITH KEN TONEY

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Ken Toney is a fantastic character artist working at EA games in California. In this month's interview he tells us a little about how his career path was altered in the space of a few minutes, and gives priceless advice about setting up a portfolio and demo reel to catch the eye of a potential employer.

"So by day I would diligently work and at night I would stay up until midnight working on my video game reel."

Hi Ken, thanks for agreeing to be interviewed by *3DCreative*. I have taken a look at some of your work and you have been involved with some really cool projects. Can you tell us a little about yourself and how you managed to find your way into the CG industry?

I went to San Jose State University to study Illustration. In fact I have a Bachelors Degree in Illustration, which I kind of use I guess. My goal was to become a commercial illustrator and paint for a living.

In my last year at college I signed up for a Photoshop class and by accident somehow ended up in a 3D class. I remember walking into the room with the intention of dropping it, but the teacher had already started lecturing. I had no choice but to wait until he was done. At some point in his lecture he asked everyone to hop onto a computer and go through the simple exercise of building a ball on a plane and rendering the scene. It was really at that moment that I was hooked. From then I became a sponge and wanted to learn as much as possible about computer graphics.

After college I applied to every game company in the bay area and was rejected by all of them. It wasn't surprising considering I didn't have a CG portfolio or demo reel. Somehow I did manage to get hired by a tiny company working on software for kids. They were probably pretty desperate and I was pretty much willing to work for free as long as I could do CG work. At the time they were developing a program that teaches kids how to do magic tricks by using a CG bunny character.

At the time it was great just to get some computer graphics experience, but it also gave me access to 3D software. So by day I would diligently work and at night I would stay up until midnight working on my video game reel. Eventually, a few years later, I got my first gig in the video game industry working for Capcom and I would consider that to be my first true CG job.









[*Laughs*] It's amazing how your entire future changed in just those few moments! You mentioned demo reels. Do you have any advice for anyone trying to set up their own demo reel?

From a character artist I like to see at least 3-5 characters depending on the experience level. During the turntable I would expect to see the wireframes at some point and a few close-ups.

As for content, I think it's important to show a variety of styles and techniques. It's good to demonstrate organic modeling, anatomy, treatment of cloth, hard surface modeling, etc.

You have worked for some really huge companies on some big titles – can you tell us a little about how you managed to get noticed by these companies? Also if you have any advice for anyone trying to do the same, what would it be?

I never set out to work for big companies, but it just somehow worked out that way. The one game studio that I did pursue heavily was Capcom, mainly because I was a *Street Fighter 2* fan and a huge fan of their concept art. I think I applied roughly six or seven times before I eventually managed to land an interview, and even then I still didn't get the job. I applied again six months later and landed a second interview, which finally led to full-time employment at Capcom. From that experience I learned about persistence and to never take rejection personally. Also it's important to note that each time I re-applied I made sure I improved my portfolio.

For someone trying to get noticed by companies these days there are plenty of CG art forums (3DTotal, ZBrush Central, CGHub etc.,) out there. I know plenty of art professionals, including myself, that visit these sites quite often so it is a great way to get recognized.

There's also the Quality Assurance (game testers) route that some people do take in order to break into the CG industry. Although that method doesn't always guarantee you'll get a job as a CG artist, it is a great way to make connections with professionals. I've met quite a few aspiring artists/animators working as game testers over the years.



Do you have any goals for the future? Are there any specific games you would really like to work on, or would you like to try something totally new like creating assets for movies etc?

When it comes to looking into my future I'm definitely torn. As a character artist you naturally want to work on the best projects out there. Games such as *Gears of War*, *Uncharted*, and *God of War* (just to name a few) are hugely inspirational to me as a character artist. Also it's important to note that these games are fun to play. I would jump at the chance to work on those projects

On the other hand, as a game developer with over 10 years of experience you can't help but start thinking beyond your role. It's just natural progression to begin looking at the bigger picture. I do have my own game ideas and I have strong opinions on general game development, business models, and where gaming is going in the near future. The best way to apply these ideas is in a small start-up project. I certainly would like the opportunity to develop a game with just a small group of game developers and help grow a studio from the ground up.

My ideal five year goal is to do both at some point, so I'll just have to keep my fingers crossed for now.





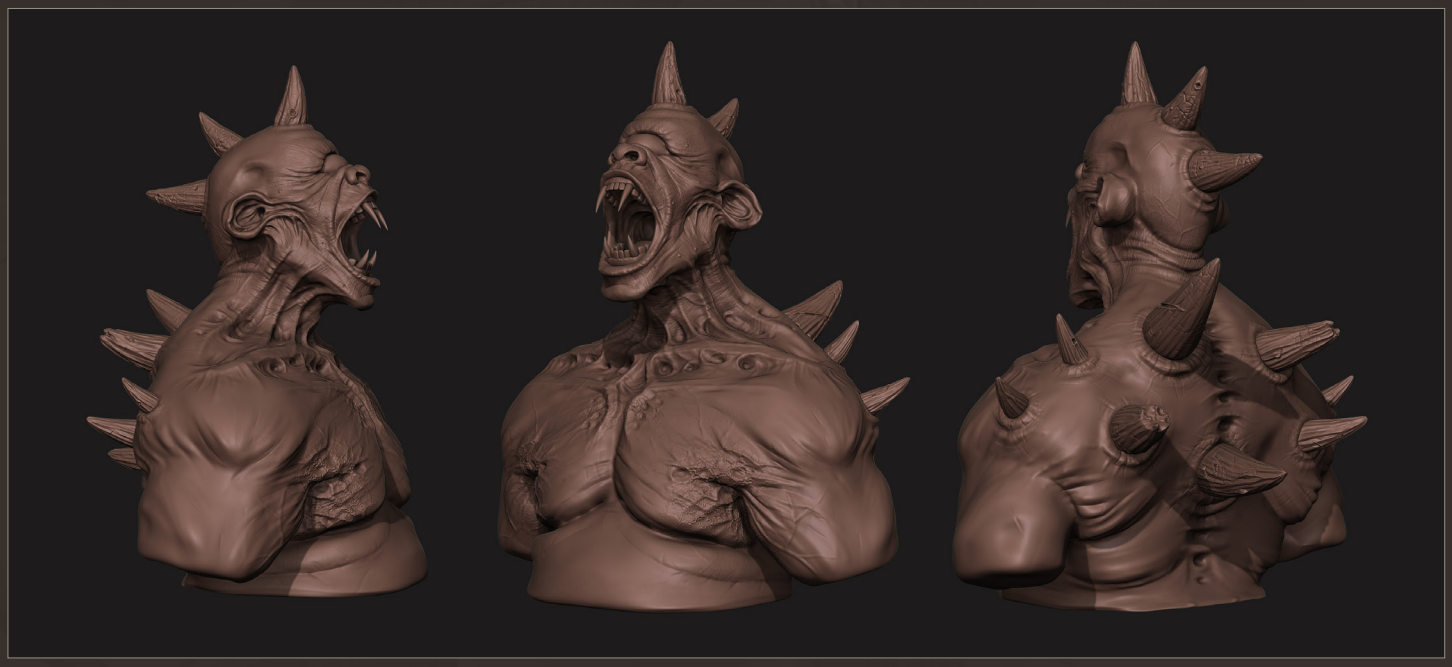
I noticed on your website that you also do 2D art. Do you find that having an understanding of digital painting helps you when painting textures etc., for your characters?

Painting textures has always felt very natural, mainly because of my 2D background. All those principles of digital painting come in handy, such as an understanding of basic color theory, identifying primary and secondary shapes, warms/cools, and lighting etc. Most of my understanding of Photoshop layers has come from digital painting, which I also use when setting up my textures.

Do you ever get the urge to spend some time digitally painting again and creating some of your own concepts? Is the ability to do this kind of thing appealing to potential employers?

Oh yeah all the time. It's one of those things that I know I need to do more of and plan on pursuing in the near future. It's important for character artists to have some ability to concept. It comes in handy quite often at work. During game development not every asset gets a concept, so at times you may have to step in and do your own. It's quite appealing to have concepts in your 3D portfolio and it shows diversity.





In the footnotes to many of your images you mention that you use Marmoset to render your characters. Can you tell us a little about the benefits of doing things this way and why you use this method over the other software available?

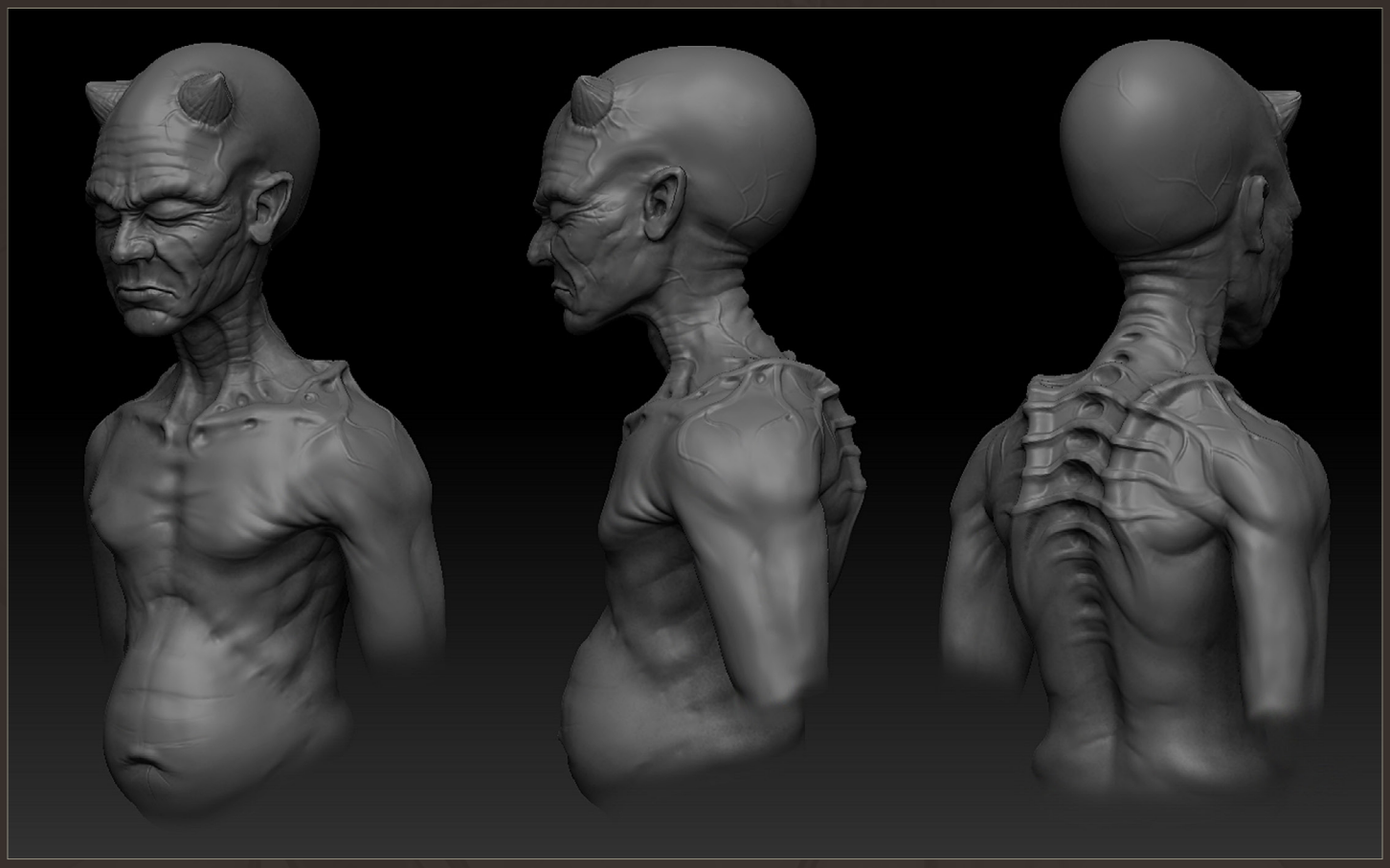
Developing real-time characters is what I do for a living. So for me it's natural to display characters through a game engine. You know it didn't seem that long ago that 3D engines just weren't accessible to regular consumers. These days, with Marmoset and Unreal, anyone can show off their work in real-time. The reason why I use Marmoset is because it's so easy to use. In fact, when it comes to my personal work I use it in my pipeline during the texturing stage. In the past I would paint my textures in Photoshop and render out small test images afterwards in Maya to see how the character was progressing. Unfortunately these test images would take roughly 5-10 minutes to render. Nowadays I just toggle between Marmoset and Photoshop and see updates within seconds.



Another reason why I use Marmoset is because more and more character artists are using it to display their 3D artwork. For the time being it does look like it's becoming a standard in our industry. All you have to do is visit any CG art forums and you'll start to see more and more 3D artists displaying their work using Marmoset.

Can you tell us a little bit about using ZBrush in your pipeline? How long do you spend in ZBrush and is it hard to know when to stop sculpting there and rely on the textures on your final model for detail?

Using ZBrush can vary depending on the project. I used to just use it for general sculpting and to extract Normal maps, but over the years I've also learned to use it for general 3D concepts, UV mapping, and texture painting. For example, on the Captain America model (my most recent project) I used ZBrush at the very beginning to quickly concept the silhouette of the character. I had a very clear idea of how I wanted him to look and with ZBrush I



was able to sculpt the main shape of the body within a few hours. After the concept sculpt was complete, I retopologized the mesh and GoZ'd back into Maya. For UVs I exclusively use the ZBrush UV Master tool. I like how it unwraps UVs perfectly and on top of that I can paint in areas that require extra density.

In terms of how long I spend in ZBrush, I would say generally somewhere between 30-40% of the full pipeline. In the next 2-3 years I do wonder if that number will increase as ZBrush keeps adding new features.

As for knowing when to sculpt and when to rely on textures, I primarily sculpt a majority of the tertiary details. The only ones that I texture in Photoshop are the very fine details, such as skin pores and cloth textures.

We are always amazed at what the ZBrush team manages to achieve with each new update of their software. What developments would you like to see in future updates?

It looks like with each update the Pixologic team somehow reads my mind. In the past I wanted to be able to set up UVs in ZBrush and they came out with UV Master. Then I wanted better retopology tools and they came out with the Topology brush and QRemesher.

The only thing I can think of that I would like to see added in future updates is the option to change the user interface (UI), so that it closely resembles Maya/Max. Personally having used ZBrush for years I don't have a problem with the UI, but it is the most common complaint I hear from other CG artists new to ZBrush.

I always like to ask people I interview what they do in their spare time and often their answers vary hugely. What do you like to do when you get chance to relax and do you find that this influences the way you work and the type of projects you are inspired to tackle in the future?

I did go through a serious motorcycle phase, but it has been winding down lately. There's nothing like hitting 130mph and then swooping into a fast left turn, dragging your knee on the asphalt. I still own a Honda CBR 600RR (sports bike), but I don't take it to the racetrack anymore. Now I just use it to commute to work once in awhile.

These days in my spare time I've been dabbling more and more with game development tools such as Stencyl and Construct 2. These tools are artist friendly, so you really don't need any hardcore programming skills. Having grown up playing classic 8-bit games, I thought it might be fun to try to develop my own 2D game. For now just getting a character to move around on screen has been a struggle, but you've got to start somewhere.

Thanks for letting me ask you a few questions, Ken, and good luck for the future!

KEN TONEY
Web: http://k-rider.cghub.com/
Email: kenwtoney@gmail.com
Interviewed by: Simon Morse

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Vue image by Evan Guzman

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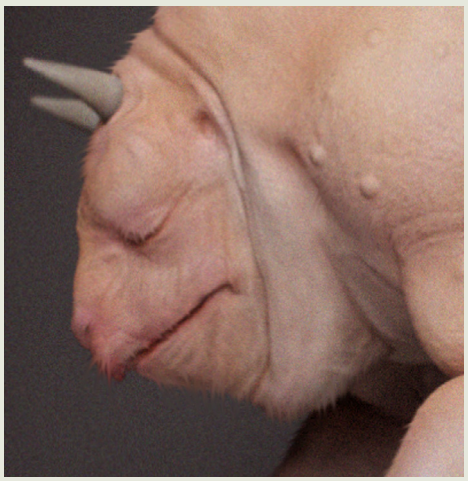












the GALLERY

This month we feature: Kris Cabrera | David Jankes | Jaroslav Cermak | Alfonso Annarumma
Pawel Brudniak | Matthew Kean | Nuttavut Baiphowongse | Manuel Bejarano | Patrick Evrard | Aeryn Davies

THE EYES

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(Right)



THE WITCHER

Pawel Brudniak
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Zombie Miner

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King of Fools

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Jaroslav Cermak

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HOW MUCH DID YOU LEARN LAST WEEK?



PETR BALATKA

PRIOR TRAINING: NONE

TIME IN SCHOOL: TWO MONTHS

TOTAL MODELING TIME: ONE WEEK

DAVE SCHOOL

DIGITAL ANIMATION & VISUAL EFFECTS

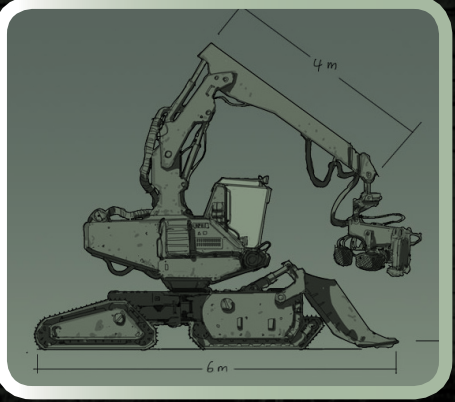
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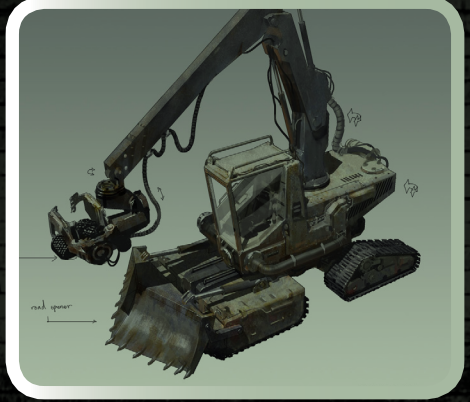
BEGINNER'S GUIDE TO MODELING
FUTURISTIC VEHICLES

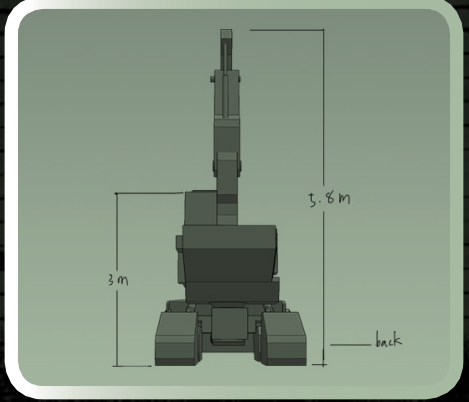


Futuristic vehicles are a common subject matter in the CG world. However, in this series we will be approaching creating futuristic vehicles in a slightly different way. Our two amazing artists have been provided with a 2D concept and technical drawing of a destructive deforestation vehicle. Over the eight-part series they will detail a step-by-step guide on how to turn this 2D information into an accurate and exciting 3D model, from the initial modeling phase through to the final rendering.

3ds max







CHAPTER 02

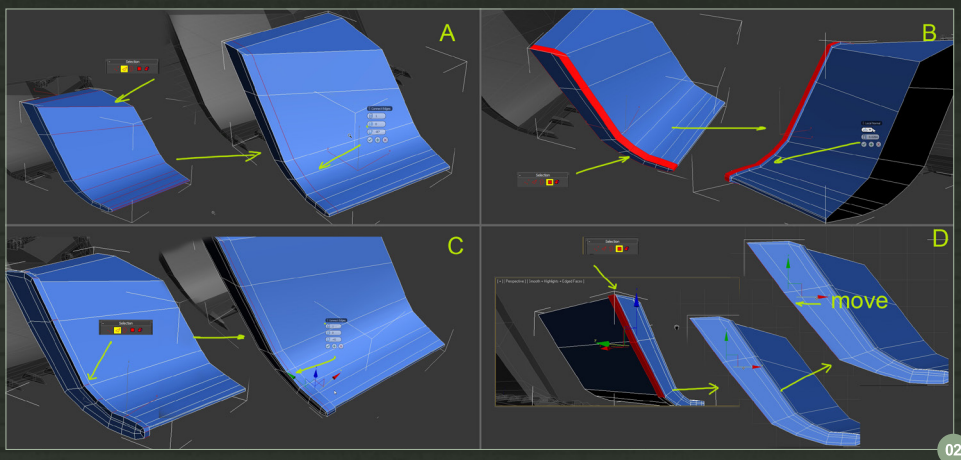
Software used: 3ds Max

It's time to get some reference pictures! On the web it is easy to find images that can be used. I found my images in a few places but particularly at the following address: http://freetextures.3dtotal.com/index.php?s=c:Industrial%20&cid=20. The images are high resolution and very good. Choose some and organize them in Photoshop or any other image editing program to make it easier to find the image you need. When you are organizing your images, isolate and crop the specific parts you are interested in. In this case the important part is the blade (**Fig.01**).



01

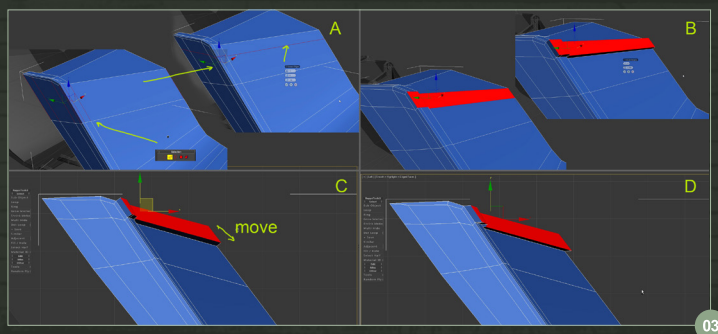
For the modeling process we will use editable poly tools (explained in chapter 1) (**Fig.02**). First select all the edges of what will be the primary face and make a cut near the side of the blade (A). Use the Polygon Selection tool to select polygons close to the edge. Apply Extrude (normal local) to create the desired shape (B). Move to the edge and select the edges of the polygons that you just created and make a cut near the side. Use this to connect edges (C). Select four sides of the selected edge and move them on the X axis to shape to the plow (D).



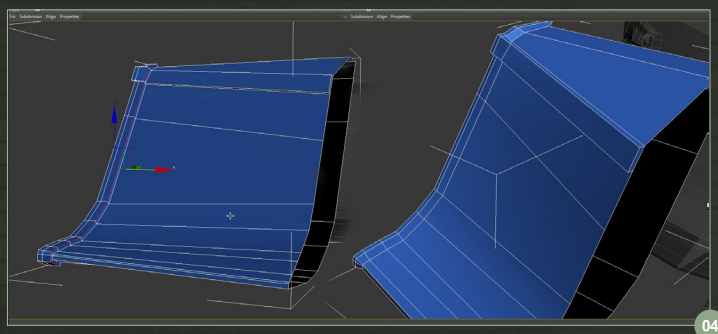
02

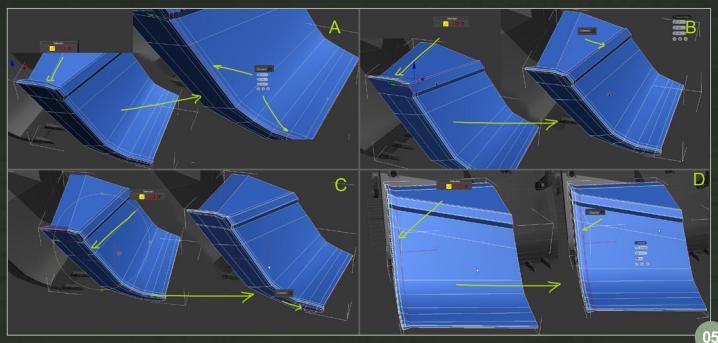
Now move on to the top edge (**Fig.03**). Select the edges of the upper part of the blade and make a cut (A), select some of the polygons that you just created and apply an Extrude (B), turn to the left view (C) and adjust the position of the polygons created (D).

Select the edges in **Fig.04** and eliminate them.

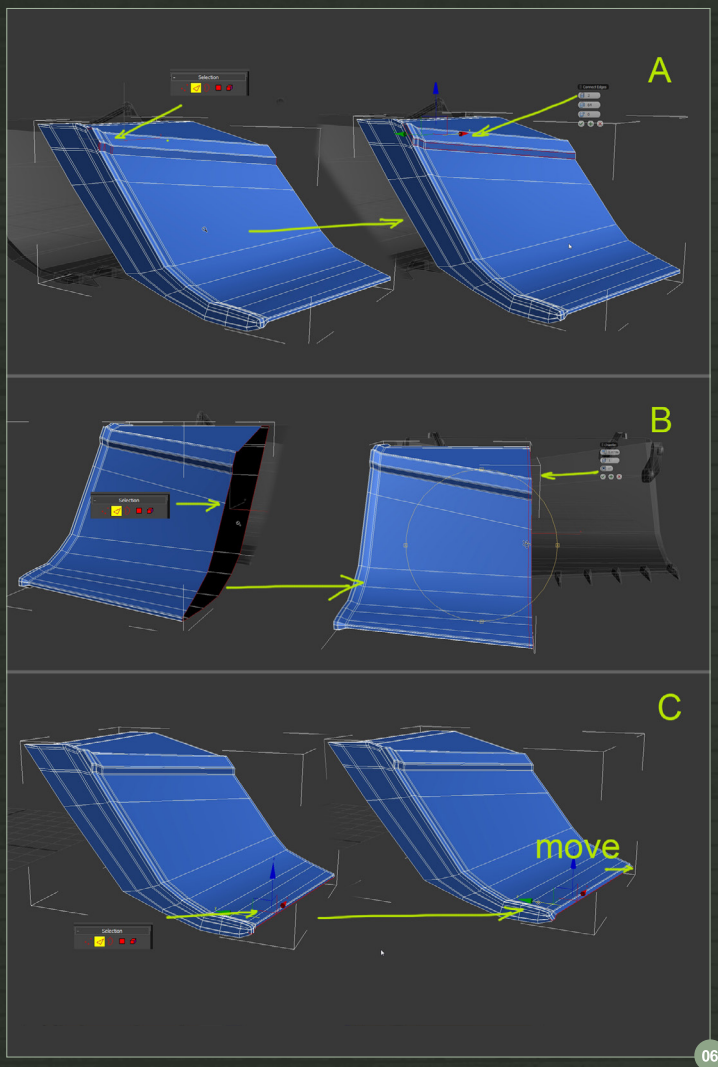


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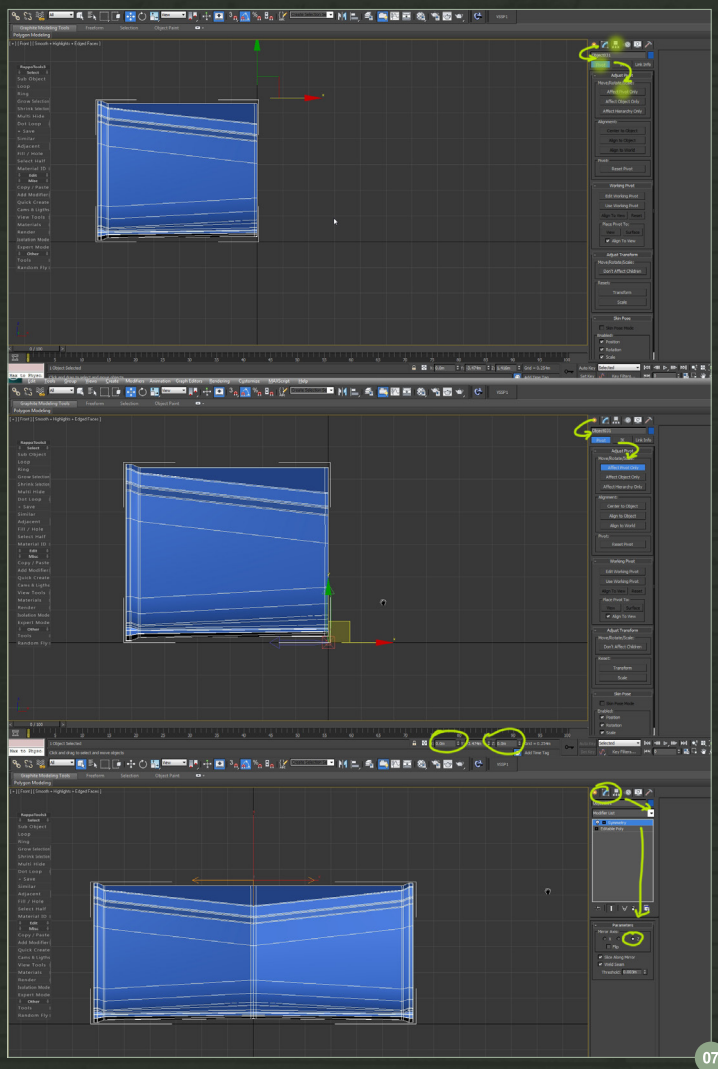

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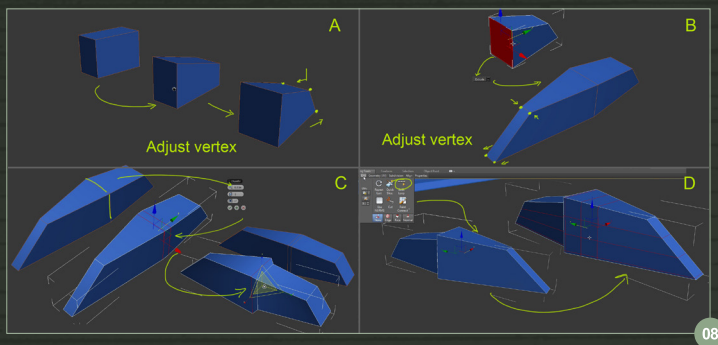
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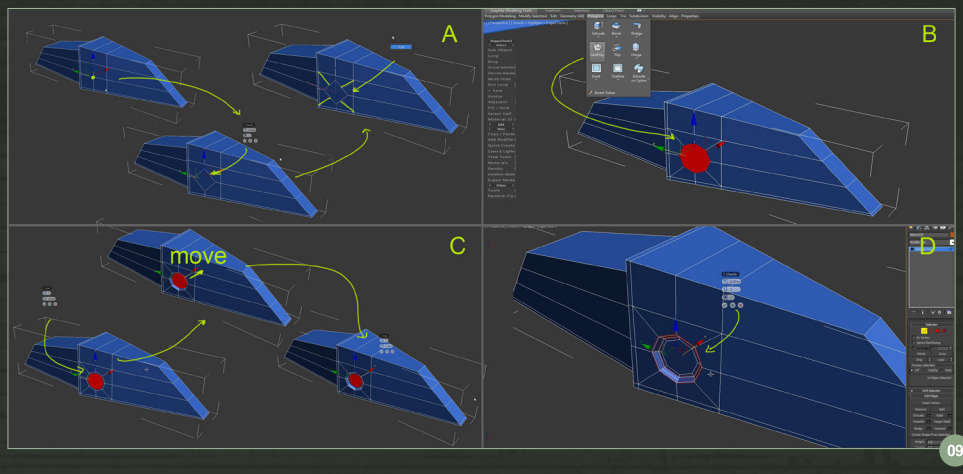
Now use the Connect and Chamfer tools to subdivide the geometry. Select the edges shown in **Fig.05** and apply Connect (A). Continue to select the chosen edges of the geometry and apply Connect again (B). Continue with the same procedure on another section (C). Use the Edge Selection tool to select the edges of the image and apply Chamfer (D).

Select the edges that are displayed in **Fig.06** and apply Connect (A), then move to the center edge of the model as shown and apply Chamfer (B). Select the bottom front edges and move them a little (C).

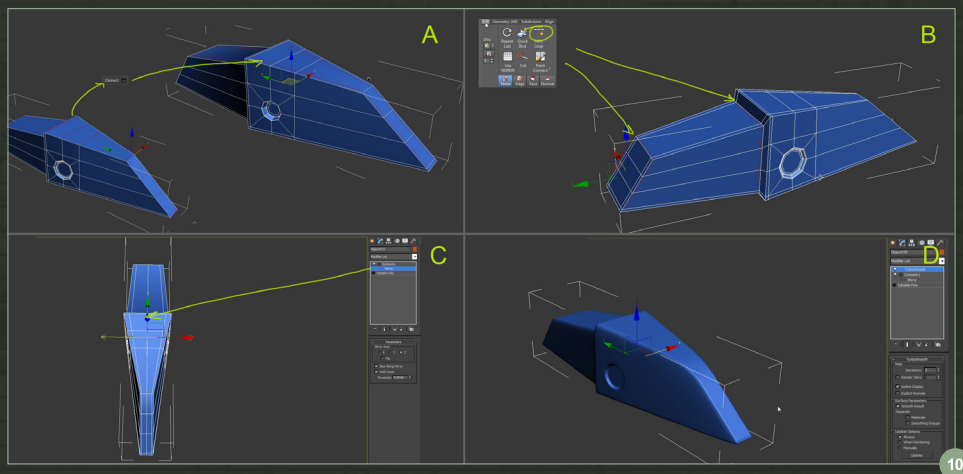
Now turn to the front view to adjust the pivot; this will help you apply the Symmetry modifier as it will be easier to see the center of the model. To do this go to the control panel, select Hierarchy, Pivot and select the Affect Pivot Only option. This indicates that it will only affect the pivot of the object that we have selected. Put the X and Z coordinates to 0.0, passed to the front view. Go to the tab modify Modifier list, select Symmetry and activate it on the Z axis (**Fig.07**).

Now let's create one tooth of the blade (**Fig.08**). For this start with a simple box that we can convert to an editable poly, select some vertices and move them to give it form (A). Move to Selection mode and select the polys you want to extrude. Select the new vertices that we just created and adjust to give them form (B).

Select the central edges and apply Chamfer, then select the edges of the model and scale it to make it bigger and the correct shape (C). With the Swift Loop tool, make the cuts that are shown in the image (D). You can also do this with the Cut tool or the Connect tool, but the Swift Loop tool is quicker and easy.

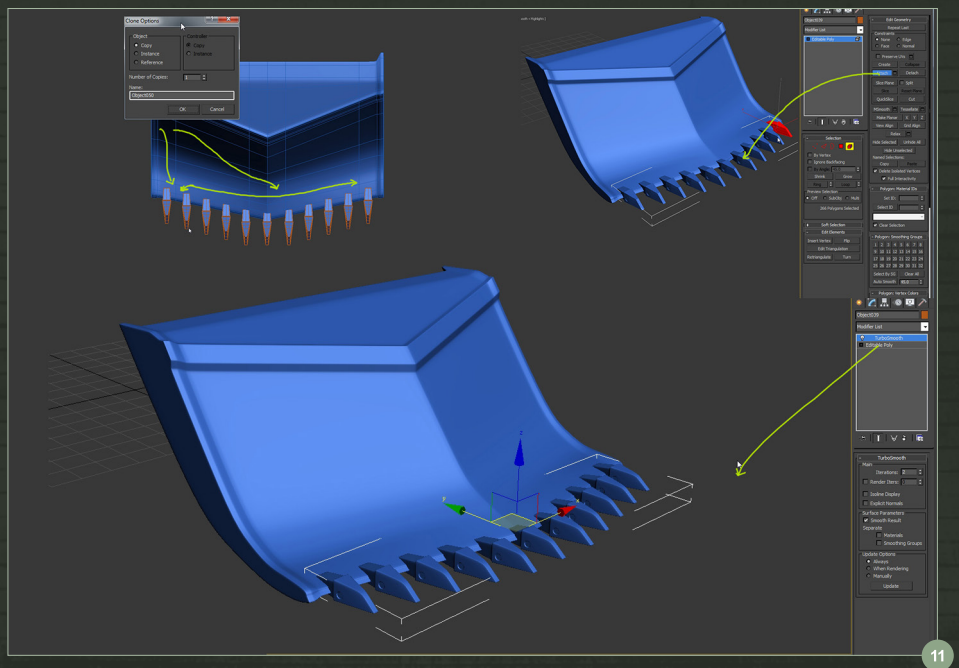


On one of the sides select the vertex that is shown in **Fig.09** and apply a Chamfer. With the Cut tool, make a few cuts (A), then move to the Polygons tab and apply the GeoPoly function to give it a more circular shape (B). Then apply an Inset, and move a little nearer to the interior before applying Inset again (C). Move on to Selection for the edge and select the edges of the image (applying a Chamfer with two segments) (D).



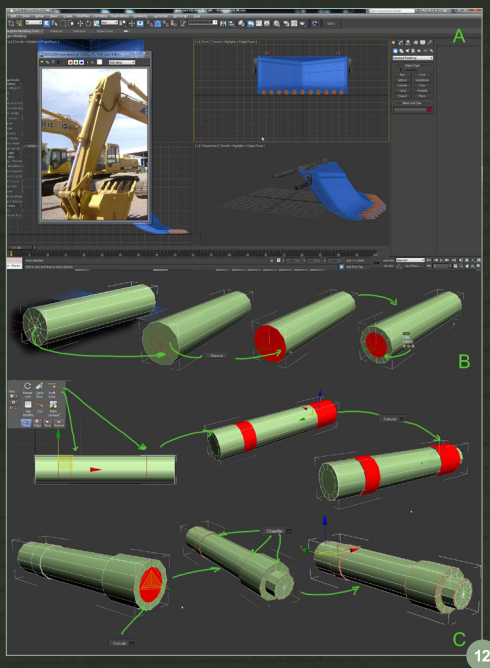
Go to Select by Polygon mode and select the edges of the central part, then apply Connect with two interactions – as seen in **Fig.10** (A). With the Swift Loop tool, make a few more cuts (B), and then apply the Symmetry modifier on the Z axis (C). Next apply the TurboSmooth modifier with two interactions (D).

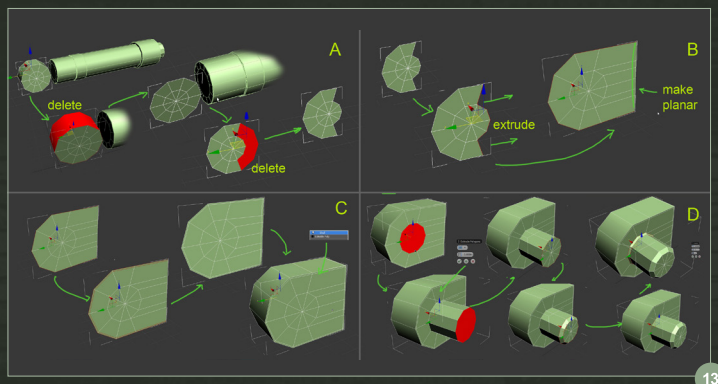
Next put the tooth in place and make copies of it. With the Attach tool, attach them to create a single object and apply TurboSmooth (**Fig.11**).



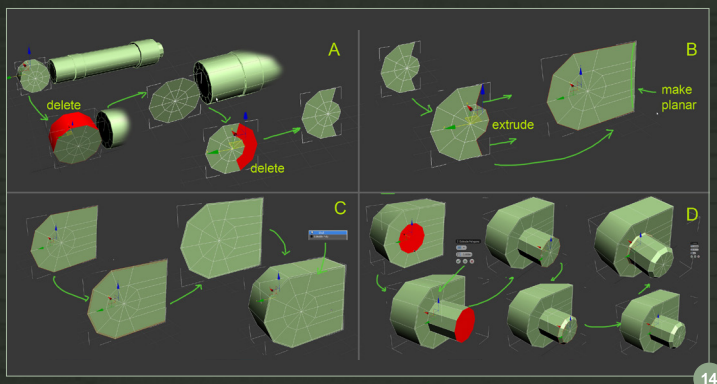
Now it's time to model one of the hydraulic pistons (**Fig.12**). For this I'm going to open one of the reference images that I found (A). Let's start with a cylinder that will be the main part of the piston. First create an editable poly and select the edges of what will be the rear. Select and remove them. Select the polygon that we just deleted the edges of and apply Inset (B).

Go to the edges and with the Swift Loop tool, make a few cuts. Move on to Select mode and apply Extrude in the selected areas with





13



14

different values. Move to the other section, select the faces of the center and apply Extrude. With these selected faces apply Inset, select the edges and apply Chamfer with two interactions (C).

Now model the part which will house the piston (**Fig.13**). Start with a cylinder with 10 sides, create an editable poly and eliminate the faces displayed in the image (A). Move on to the edges and apply Extrude. Then apply Make Planar on the X axis on the edges that the extrude was applied to (B). Select the edges that are shown in the image, and apply Chamfer. Use the same process and apply it to the edges that are displayed in the picture.

Now apply the Shell modifier to give volume to the geometry (C). Make it an editable poly and select the surfaces that form a circle. Apply Extrude to the selected edges that are displayed and apply a Chamfer. Apply it again to the base (D).

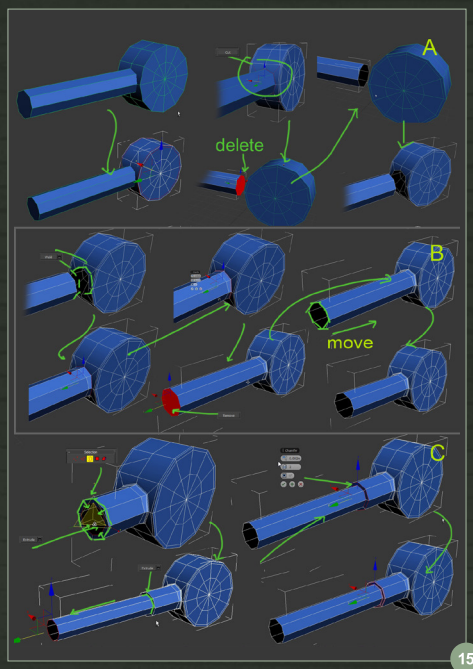
Weld the vertices that were created so they don't cause problems later (**Fig.14**). Select another group of edges and apply Chamfer with two interactions (A). Make the cuts that are displayed in the image, then select the polygons on one side and copy them. Then turn to the left side view (B). Rotate the element that you just created, select the corners of the model and move them a bit to shape the selected edges of the inner and outer contour. Apply a Chamfer (C). Then weld the vertices and apply the Shell modifier. Make it an editable poly and give it volume, then apply TurboSmooth (D).

For the next piece create two cylinders, one with 8 sides and another 12. Using the Swift Loop tool, make a few more cuts as shown in **Fig.15**. Make cuts following the shape of the second cylinder. Take the side of the cylinder and eliminate it, then attach the other cylinder and remove the faces displayed in the image (A). Select the two edges and apply the Bridge tool, then select the edges where the two cylinders are welded and apply Chamfer.

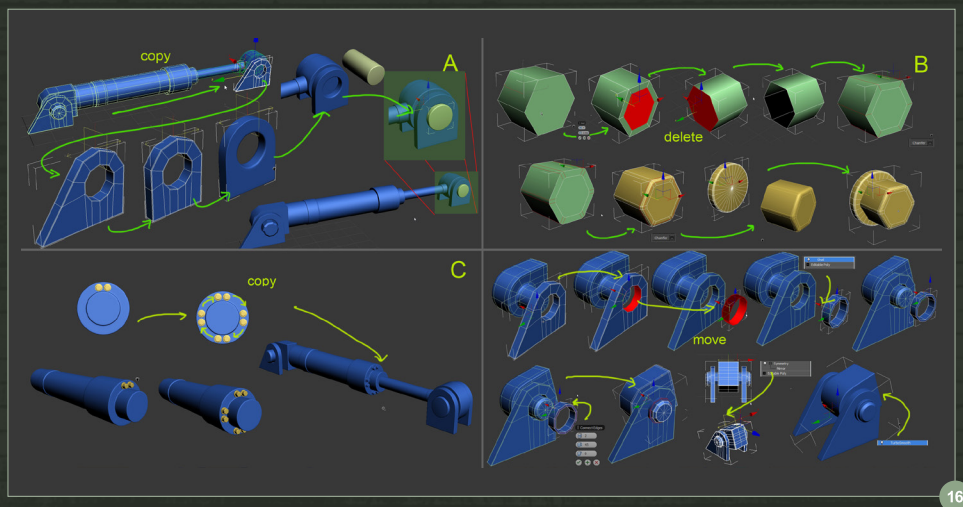
Select the extreme cylinder ortho and eliminate the face. Move to the edge and move it a bit (B). Select the edge and apply Extrude towards the center, then apply Extrude again. Select the edges in the image and apply a Chamfer with two interactions (C).

Select one of the pieces that you have modeled. Copy it and move it to where it will be coupled with the shovel. With this new piece, apply the Symmetry modifier on the Z axis to give you a different shape (**Fig.16**).

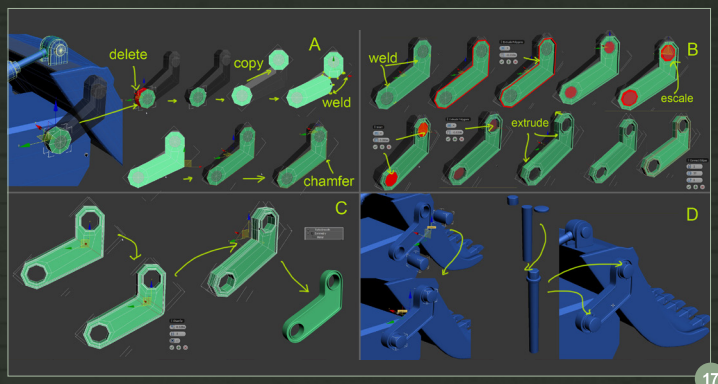
Next create a cylinder with 30 sides (A) and a six-sided cylinder, and make them an editable poly. Select one of the six side faces and apply Inset, then eliminate edges that you see in the image and apply Chamfer.



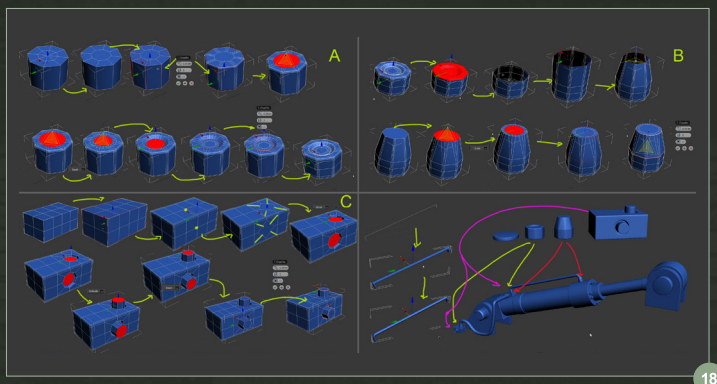
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Apply two interactions to the cylinder with 30 sides and apply Chamfer. This will be the base of a bolt head that will apply detail to sections of the piston. Select this and attach it to the six-sided cylinder that we created previously (B). Copy the bolt and place it on the body of the hydraulic piston (C).

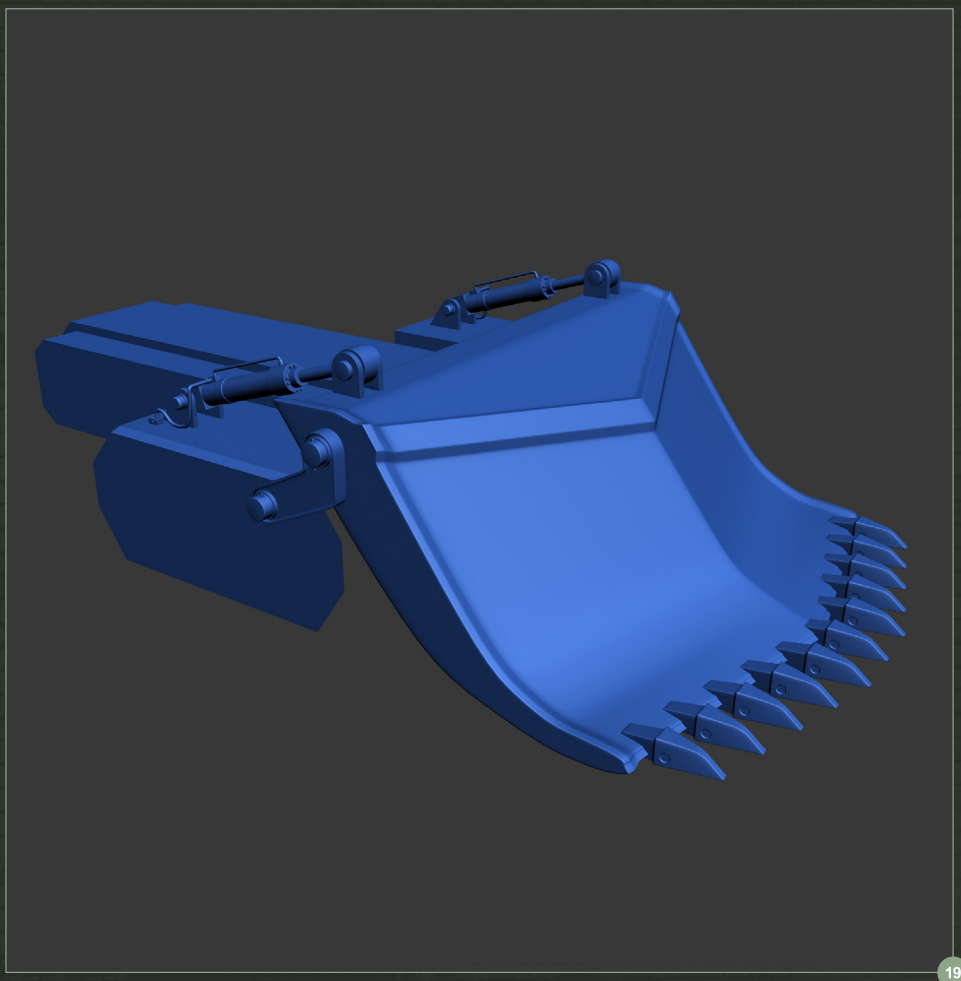
Isolate the parts belonging to the base of the hydraulic piston (D). Select the faces of the central part of one of the pieces and copy them. Apply the Shell modifier and make it an editable poly. Select the edges of the sides and apply Connect Edges. Place it in position and use Attach, then apply the Symmetry Modifier and Turbosmooth to see the result.

Move on to the arm that holds the scoop to the vehicle. Start by creating an eight-sided cylinder. Make it an editable poly and eliminate the exterior faces (**Fig.17**). Copy it and rotate it slightly. Apply Weld and adjust it to create the correct shape. Select the edge and apply Chamfer (A). Weld the vertices so that they don't cause any problems later. Select the polygons on the edge and apply Extrude. Select the polygons forming a circle and extrude them a little. Apply Inset and remove the end faces. Select the edge and apply Extrude. Select the different edges shown in the image and apply Connect and two Interactions (B). Select the central edges and apply Chamfer. Apply the Symmetry and Turbosmooth modifiers (C). Place the part in position and create two cylinders with 24 sides. Place the new piece over the cylinders and add a small screw to hold them in place (D).

Now it is time to create the hydraulic system (**Fig.18**). The first part starts with a cylinder with eight sides, which you will need to make an editable poly. Eliminate the central vertex and apply Chamfer. Repeat the process and select the polygon in the center. Apply Inset and move on to the center of the piece, and use Inset again. Select the edges and apply Chamfer. Apply Symmetry on the Z axis (A). Copy the piece and select the polygons in the image and remove them. Select the edge and scale and cap them. Apply Chamfer and three Interactions to the edges (B). Then create a box and make the cuts you see in the image (C). Select the two central vertices and apply Chamfer. Make a few cuts and apply Bevel, Inset, Extrude, then select the edges and apply Chamfer with two Interactions (C). The last item is a simple chamfered cylinder. Put all of the items in position (D). This concludes the shovel (**Fig.19**).

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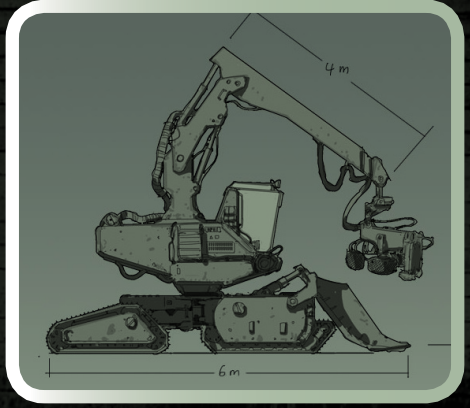

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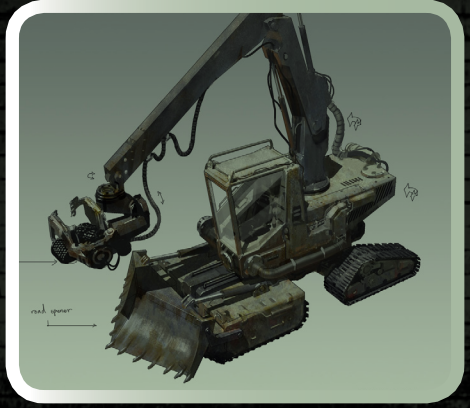
BEGINNER'S GUIDE TO MODELING
FUTURISTIC VEHICLES

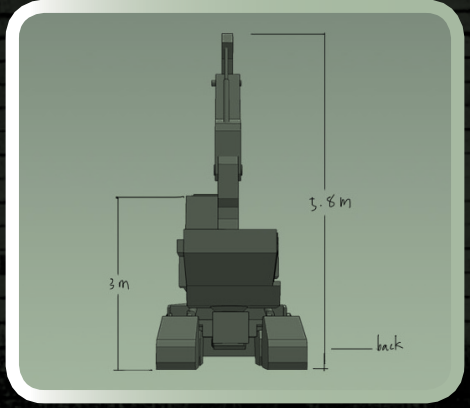


Futuristic vehicles are a common subject matter in the CG world. However, in this series we will be approaching creating futuristic vehicles in a slightly different way. Our two amazing artists have been provided with a 2D concept and technical drawing of a destructive deforestation vehicle. Over the eight-part series they will detail a step-by-step guide on how to turn this 2D information into an accurate and exciting 3D model, from the initial modeling phase through to the final rendering.

Maya







Chapter 02

Software used: Maya

Introduction

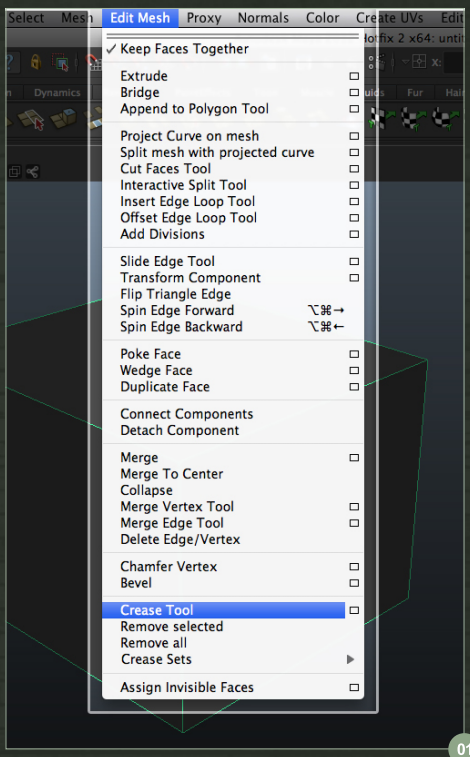
In the previous chapter we saw how to order our workspace and plan a project efficiently. In this chapter I am going to give you some tips to improve the model using different tools

Pre-concepts

One of the things that we have to be clear about when we are modeling something mechanical or organic, is the way that the light will interact with the surface. This is a very important aspect and it's necessary to think about it before starting the model.

In real life nothing is absolutely straight. The edges of any object always have a minimal curvature. When light hits a surface this curvature reflects the light slightly differently than it would do if it was perfectly flat.

Maya has multiple options to simulate this effect, the first being the Crease tool, which hardens the edges and leaves them completely straight. To use this we should select the object, press 3 on the keyboard, go to Edit Mesh in the Polygons section and select the Crease tool (**Fig.01**).

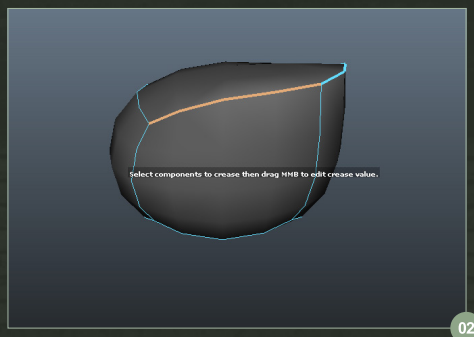


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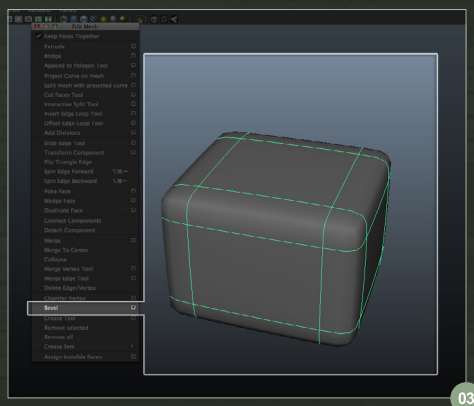
Then using the middle mouse button (MMB), click and drag to have control of the hardness of the edge (**Fig.02**).

Another option is to use a Bevel. Select the object, go to Edit Mesh and press Bevel. The edge will be softer immediately (**Fig.03**).

A more complicated way to get this effect is through a mental ray node called Mia_roundcorners, which is located in the

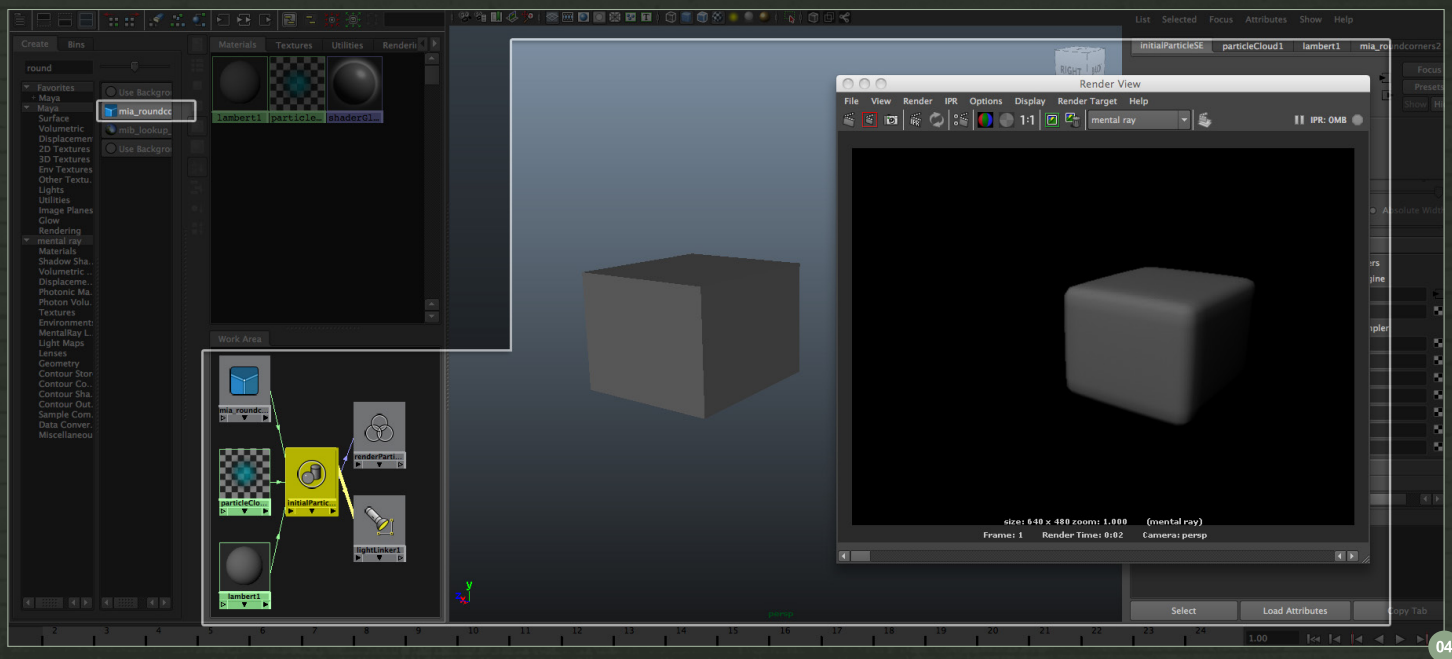


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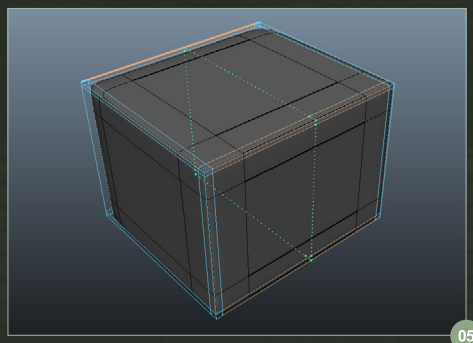

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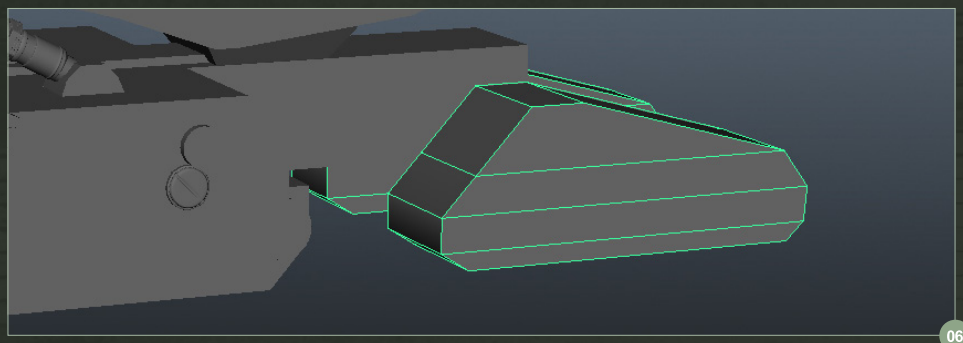
Hypershade section (Window > Rendering Editors > Hypershade). When this is applied to an object the edge is smoothed; this can be seen at the moment of rendering (**Fig.04**). The advantage of this method is that if we have two separated objects and apply the same node to both, their geometrics are mixed perfectly.

The last option is to add edges with the Edge Loop, Cut Face or Interactive Split Polygon tools. This way adds many polygons to



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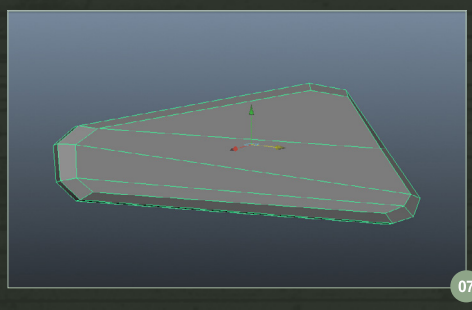


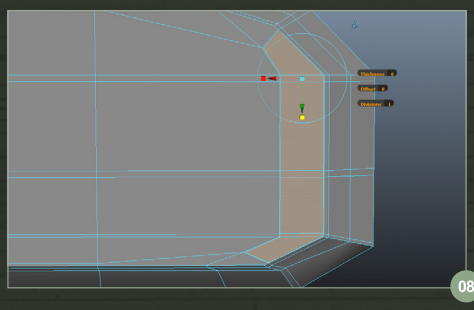


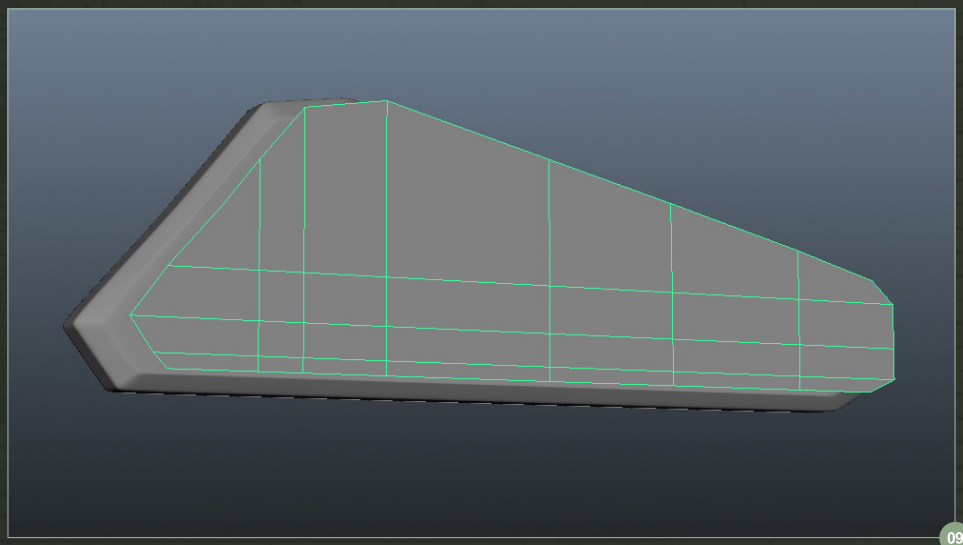
the mesh, but makes our final model fully compatible with other software and what we finally see in Maya can be replicated in 3ds Max, ZBrush, modo, Cinema 4D, etc (**Fig.05**).

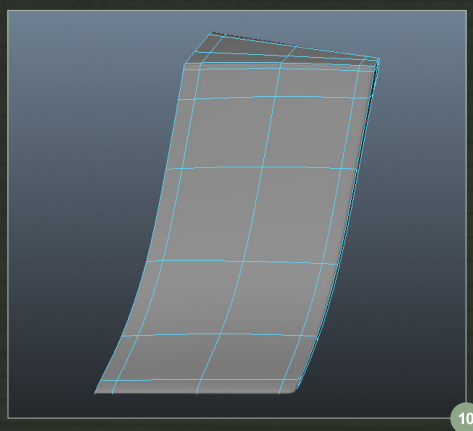
To start, select the base of the model and copy it (Ctrl + C in Windows, Cmd + C on Mac). The reason we don't just duplicate the model is that if we did, the model would automatically be inside the LW layer (low res). By copying it, if we hide our base shape the copied one stays visible, and isn't in any layer (**Fig.06**).

Once you are done with the Edge Loop tool, start to add more geometry to get close to the final shape, and then press the right mouse button to change the Face Selection mode (**Fig.07**).









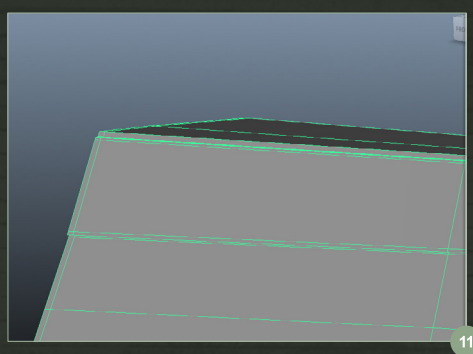
Select the faces to Extrude (I select from my custom shader or by going to Polygons > Edit Mesh > Extrude) and apply (**Fig.08**). By pressing 3 on the keyboard, the geometry will be completely smooth, but we do not want that so use the Edge Loop tool to add edges to the form (**Fig.09**).

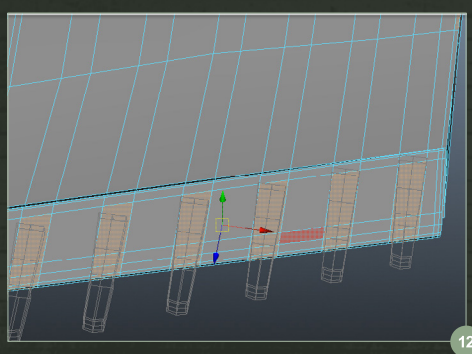
Blade

For the blade, like the previous piece, select from the LW layer and then copy it so it's not a separate duplicate layer. After the split you only have to work with half and double it after (**Fig.10**).

Start applying the Edge Loop tool to harden the edges once you can see that everything works perfectly (**Fig.11**).

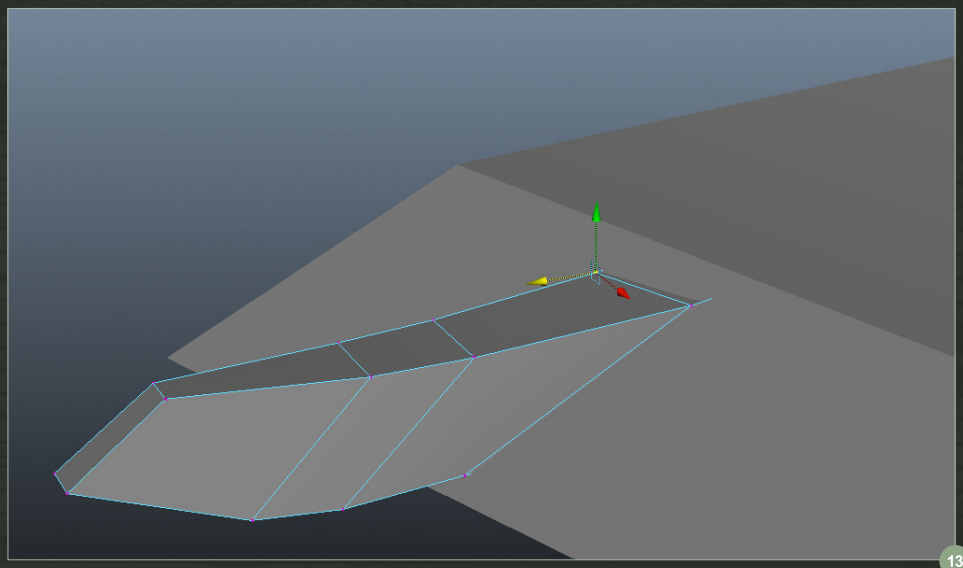
Once this is done, switch to Face Selection mode and select each face that requires the addition of these details (**Fig.12**). Use the Extrude tool to drag out the teeth on the digger scoop to match the concept.





To repeat an operation within Maya simply press G on the keyboard (**Fig.13**).

Finally apply an Edge Loop horizontally and press 3 on the keyboard, checking that all the edges are perfect (**Fig.14**).


13

Wheels

Undoubtedly the wheels in this concept are one of the most important features. The first question we need to ask is, how can we create them quickly? Unfortunately, Maya doesn't contain a very good tool with which to work with; the location of every component of this piece would have had to be done by hand, polygon by polygon.

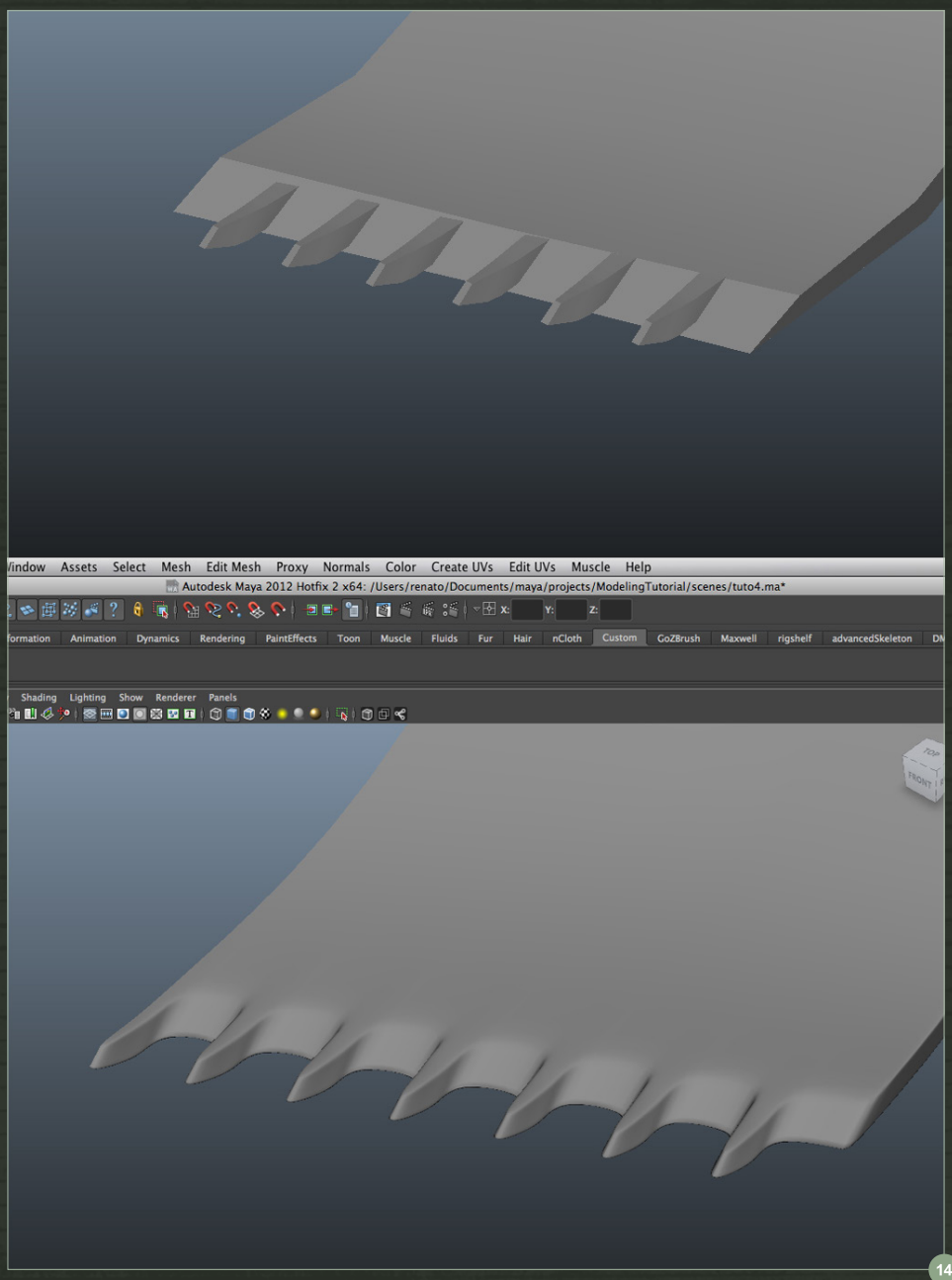
To make the process much faster and easier, we are going to use a small but powerful Mel Script. What is a Mel Script?

The Maya Embedded Language (MEL) is a scripting language used to simplify tasks in Autodesk's Maya. Most tasks can be achieved through Maya's GUI with MEL; as well as that, certain tasks are not available from the GUI.

MEL offers a method of speeding up repetitive or complicated tasks, as well as allowing users to redistribute a specific set of commands to others that may find it useful.

MEL is syntactically similar to Tcl and Perl. It provides some memory management and dynamic array-allocation, and offers direct access to functions specific to Maya. The majority of standard commands are default Maya MEL scripts, saved in the Maya Program Files directory.

MEL is fairly limited compared to mainstream scripting languages. It is not object-oriented, and lacks advanced features such as associative arrays. Not many improvements have been made to it in recent years, and Python was added to Maya 8.5 as an alternative to Maya MEL.



14

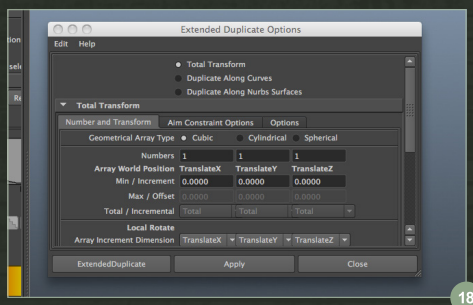
The Extended Duplicate tool is a free MEL script that gives us more opportunities and facilities when we are working with the Duplicate tool.

For proper installation files must be located within your MEL script folder located at:

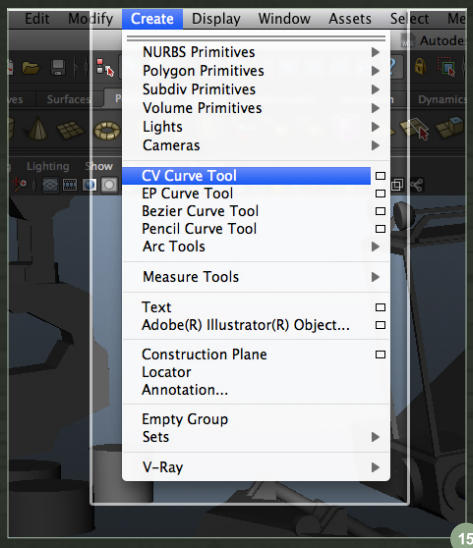
- **Windows:** C:\Documents and Settings\<your login name>\My Documents\maya\scripts\
- **Macs:** Users/<your user name>/Library/Preferences/Autodesk/maya/scripts/In Mac

The basic way that the Extended Duplicate tool works, is that it automatically duplicates an object through a curve. To this we will create the base form of the wheels with CV Curves (Create > CV Curve Tool) (**Fig.15**).

Once drawn, press Enter to complete the process. Remember that if you want to change the shape of this curve, you just switch to the Vertex select mode and it can be edited quickly.



18



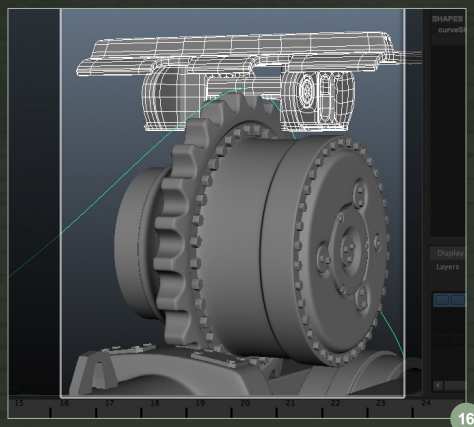
15

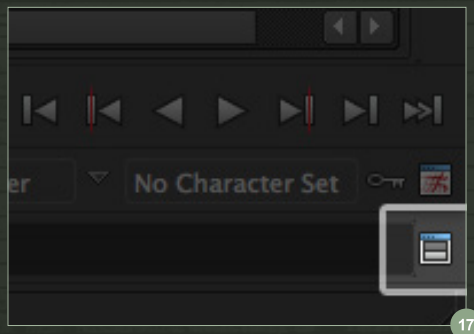
Then, select the object to duplicate it. In our case we are applying this tool to the components of the wheel, but you can apply this tool to guns, even organic or mechanical stuff. Then select the curve (**Fig.16**), go to the Script Editor by clicking on the icon shown in **Fig.17** and write the following command:

```
source perform_NP_duplicate;
```

This will activate our pre-installed script.

Here you will find a lot of parameters that, evidently, extend the duplicates options. Inside the tool we find the Duplicate Along Curves tab; it is here that we point out the number of times that the mesh will duplicate along the curve.

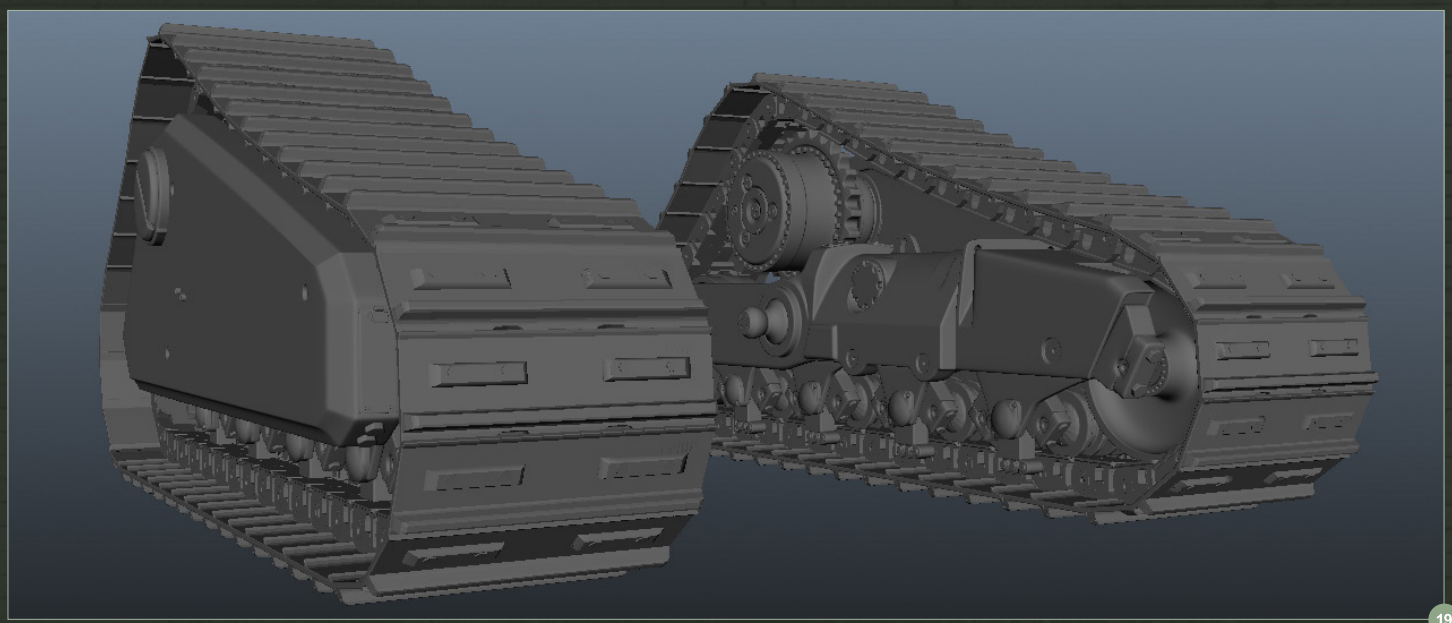

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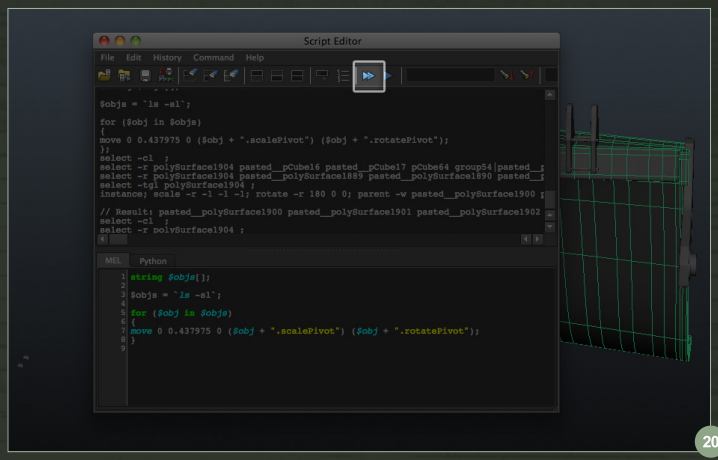


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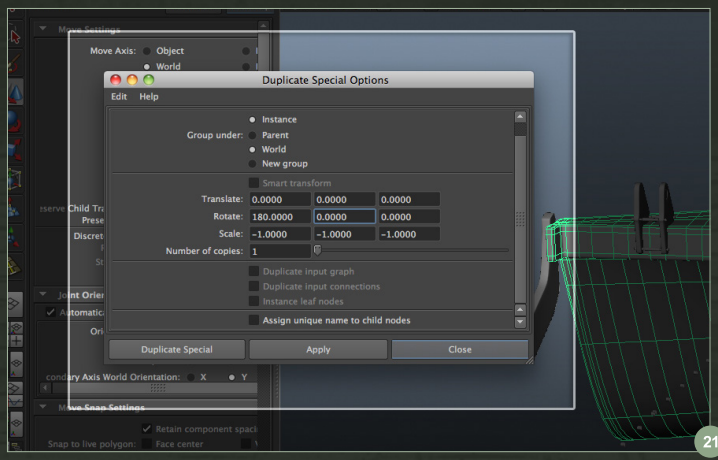
This step is trial and error; there isn't an exact number to automatically get the final result, and it is highly dependent on your model, which is the biggest problem with the script as you can't undo it. You have to delete the duplicates every time you try a number of copies, which becomes a bit tiresome (**Fig.18**).

Also inside this tool you will find the advanced options, where we set the orientation of the duplicates (-X, + X,-Y, etc). With one quick


19



20



21

click, we have our wheels done and perfectly modeled, and then we just have to repeat the process with the front wheel (**Fig.19**).

Mirror

For this model we need to inversely replicate it, whilst maintaining the separate parts. In this case Mirror Geometry is not useful because it would be the duplicate object inside the mesh, and they are too many parts to move one by one. We will use a little expression to center all the pivot points in the scene with just a click. To select all the objects to duplicate, we go to the Script Editor and type:

```
string $ objs [];

$ Objs = `ls-sl`;

for ($ obj in $ objs)
{
move 0 0.437975 0 ($ obj + ". scalePivot")
($ obj + ". rotatePivot");
}
```

Then press Execute All (**Fig.20**).

Now we go to Edit > Duplicate Special Extras and the options window will open. We want to set Group under to Select Instance (if we change something in the original mesh, this part will be reflected immediately in our duplicate object) and World. In Rotate give a value of 180 X and set all scale values to -1. With-X we duplicate in a negative direction and the orientation will automatically rotate by 180 degrees (**Fig.21**).

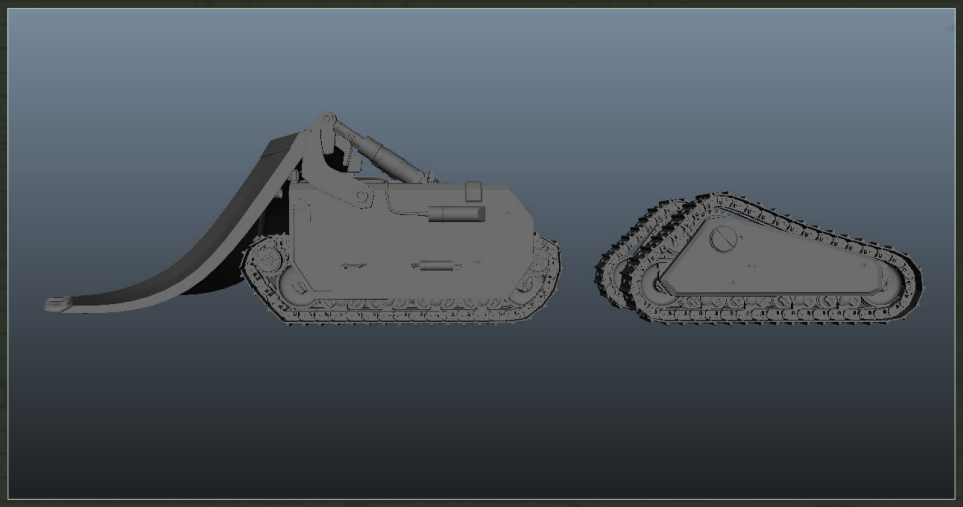
Conclusion

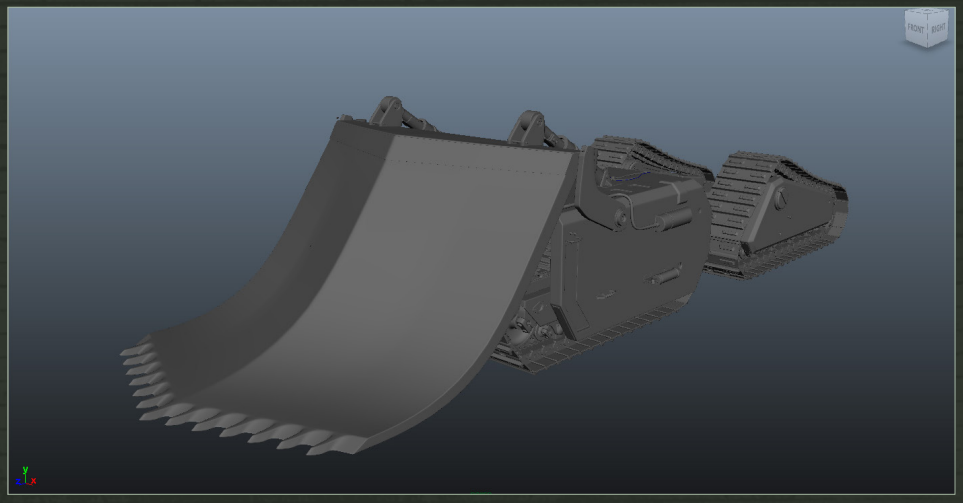
In conclusion, inside Maya we can reach the same result in different ways and by learning the basic use of the software we can choose the most convenient way of working (always think about personal comfort when modeling). Also we learned the basic use of the MEL script. We are always trying to speed up the workflow and quality when we are working.

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Olivia

FEMALE CHARACTER CREATION WITH ANDREW HICKINBOTTOM

We are bringing you a special treat in the form of a three-part tutorial series by Andrew Hickinbottom, a talented and experienced character modeler, with a penchant for stylized pin-up girls. In this series Andrew will cover modeling, UV'ing, texturing, lighting, creating the background and post-production. Andrew kicks things off in this chapter by talking us through the modeling of his character 'Olivia'.

Chapter 01 – Modeling

Software used: 3ds Max, V-Ray and Photoshop

My name is Andrew Hickinbottom and I am an experienced character modeler, with a preference for stylized pin-up characters.

Introduction

I will be using 3ds Max, V-Ray and Photoshop for this series, though the steps can be adapted to suit your preferred software. Basic knowledge of modeling tools and general program functionality are required.

Concept and Reference

During a comic convention I was exhibiting at, a girl called Olivia was my table neighbor. She is an illustrator, and she also does some modeling/photography work. I decided to base a personal piece on her.



01

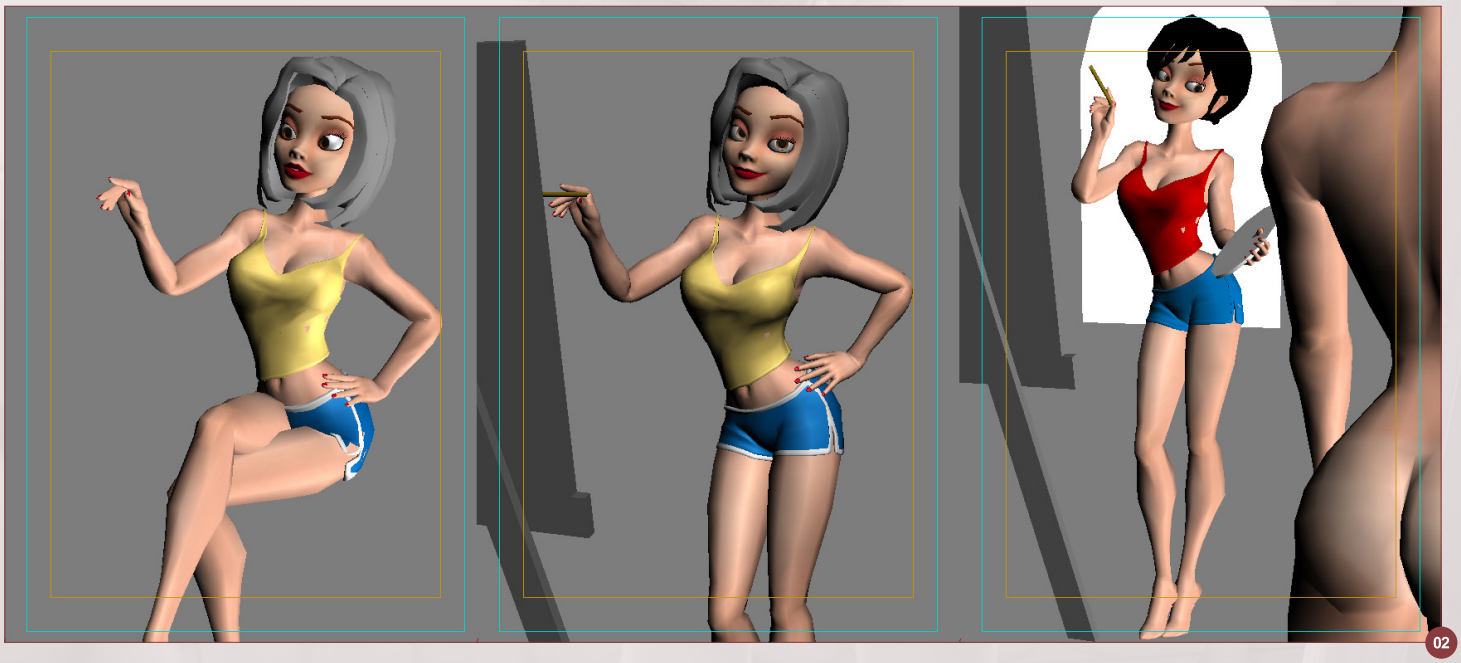
Fig.01 shows the main reference photos I took myself. I had a rough idea of the theme and scene – a cheeky life-drawing session, using a nude model in the foreground, a large canvas, and a bright window as compositional elements to frame Olivia.

Fig.02 shows my early attempts to block out some rough pose ideas using 'Suzie', a character I made in 2006. I get frustrated trying to sketch my ideas on paper, so it made more sense for me to quickly pose a previously rigged character and take screenshots.

Blocking out the Head

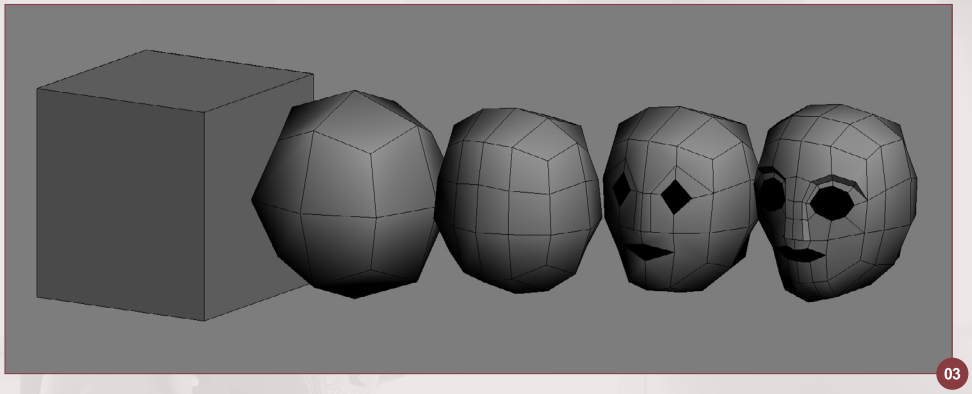
As with most organic things I model, I begin with a box primitive. A TurboSmooth modifier is applied and collapsed, so I am left with a low poly ball made of four-sided polys. I cut it in half, and apply a Symmetry modifier so I only have to work on one side. I select the edge rings around the sphere and use the Connect tool to create extra edges, which smooths it out.

Next, I begin the eyes by chamfering a point to create an eye hole. I use the Cut tool to create a hole for the mouth. The Cut tool is also used



02

to create the basic form of the brow and nose. I cut extra radiating edges around the eye hole to make it rounder and extrude the nose/brow polys. I add an extra edge loop circling the face to smooth it out and to begin a jaw line, and define the mouth hole further (**Fig.03**).


03

Head Progression

Continuing with the head, I use the Cut and Edge Connect tools to increase the mesh detail around the eyes, nose and mouth. Eyelids are extruded from the eye edges and the vertices are pulled into shape. The mouth hole is filled, and formed into lips. A neck comprising of an eight-sided cylinder primitive is added and positioned.

It is important to establish tidy topology and an edge loop system as early as you can, so I use Cut to create radiating edge loops from the mouth, which converge at the nose corners. It can be a messy process, with lots of edge removing, pulling of vertices and edge cutting, so be sure to move and collapse any untidy vertices clusters left behind.

I want a very specific crease around her mouth, so the topology is a little unconventional in this instance. I add a sphere primitive with a simple poly color material assignment and positioned it to shape the eyelids correctly. I'll make the eyeballs properly later on.

Next, the nose is smoothed out, simple nostril holes are extruded inwards and shaped, and I start defining the creases around her mouth and cheek. Generally, the whole head is smoothed out and extra edges are added where detail and definition are needed.

A short cylinder primitive is added to form a placeholder for the ears, which I'll model later. The neck is attached to the head by cutting a matching hole on the underside of the head, then attaching the neck object, before finally collapsing the matching points of the two surfaces (**Fig.04**).

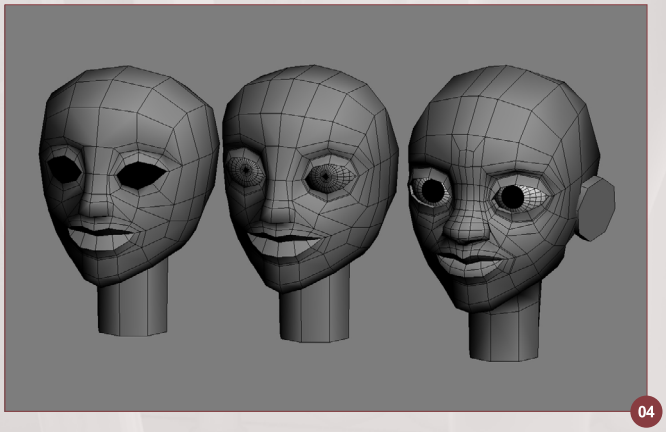
Head Refinement

The head is starting to look pretty good now, and is reasonably defined, so I'll add a TurboSmooth modifier to subdivide it. For the purposes of showing the topology on this image, I'm using Isoline display on the TurboSmooth modifier. Using the same methods as before, as well as Vertex Soft Selection manipulation, I gradually shape and build up the head to how I want it to look.

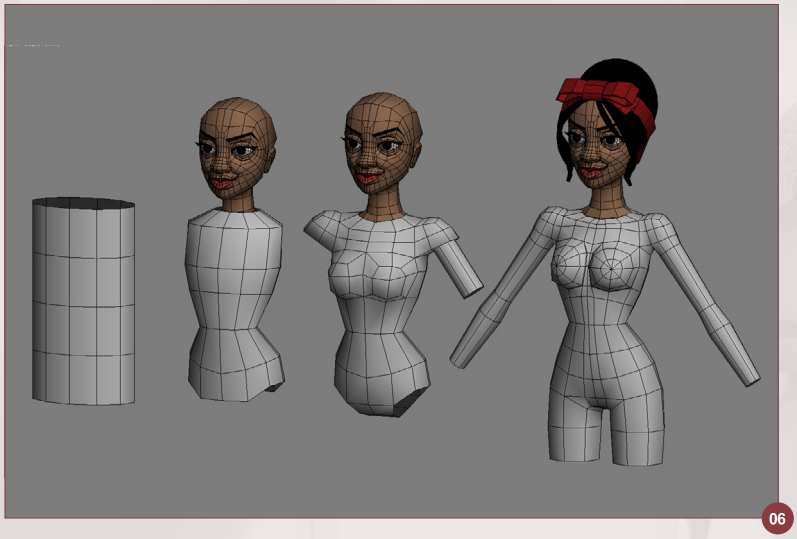
The eyelid edges are extruded inwards, as are the lips, and creases are sharpened up with the addition of closely placed edges. The eyebrow polygons are currently assigned a temporary sub-object material color, just to help visualize it. Eyelashes are made by extruding the upper eyelid edges outwards, detaching the polys, shaping the points manually, and giving them thickness by adding a Shell modifier.

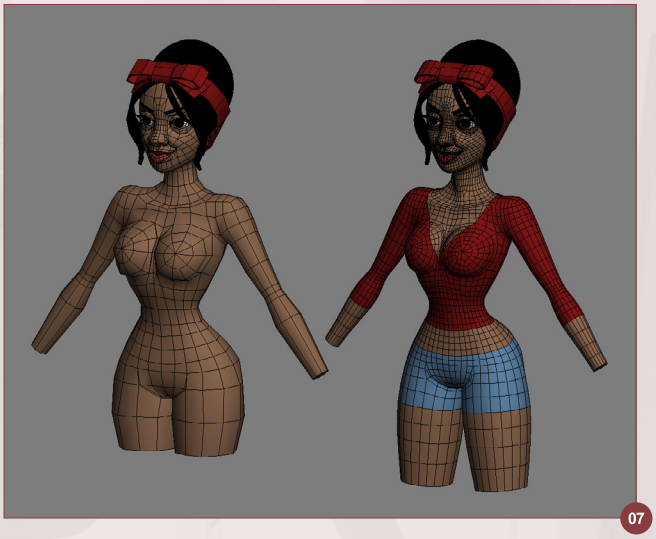
The ear is shaped and attached using similar techniques to the neck, but I won't go into detail as the headscarf covers most of it, and we barely see it.

The hair comes next. A sphere primitive is placed to form the bulk of her hair. A cylinder begins the form of her headscarf, and a symmetrical strip of edited polys form her front bangs. A bow is made from more edited poly strips. A Shell modifier is added to give thickness. Temporarily adding a Shell modifier above the TurboSmooth modifier allows you to see the subdivided model's edges sharply, before you add any extra loops to tighten up the edge subdivision. The main hair sphere is rotated and bent, so that the hair 'flows' from the crown, and the bangs are shaped into curls using manual point manipulation (**Fig.05**).


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Starting the Body

I'm happy with the head at the moment, so I'm moving on to the body. I will revisit it once I build up the whole model. I begin with a twelve-sided cylinder, which I flatten slightly. I turn it into an editable poly and delete the caps.

Next, I scale and move the edge loops on the body to create a waistline, hips and chest. I add edge loops using the Connect tool to create enough vertical sections to create the shape I need, but I'll keep things simple for now. The left half is deleted, and a Symmetry modifier is added to make it easier to work with. Edge loops are added to increase definition around the chest and shoulders, and a four poly selection is extruded out to form the base of a breast.

Another four poly selection is extruded out and shaped to resemble the shoulders and an eight-sided uncapped cylindrical primitive is positioned to form the arm base. The underside crotch edges are extruded to bridge the gap and the open hip edges are extruded down and shaped to form the thighs.

I then attach the arms by snapping the vertices of an eight-edged hole in the shoulders to the top of the arm cylinder, attaching the object, then collapsing the points along the join. More edges are added to the breasts and hips to smooth them out, and the arms are shaped slightly by adding edge loops (**Fig.06**).

Body Progress

I spend a while pushing and pulling points around the body to shape it how I want it. Soft Selection is useful, as well as edge constraints, so you can move vertices along edges without disrupting the volume or surface of the model too much.

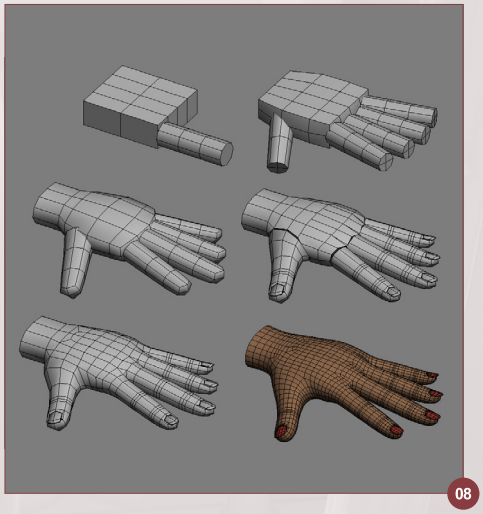
Once I am happy with the shapes and level of definition, I subdivide it and begin blocking out the boundaries that the clothes will occupy. Her hot pants are defined with colored polygons in a Multi/Sub-Object material assignment. The neckline of her top has been defined with the Cut tool as neatly as I could and separated from the head/shoulders. The torso is looking pretty good now, so I'll move on with the rest of her and come back to it once I see the bigger picture (**Fig.07**).

Hands

The next thing to tackle is the hands. I make a box with four sections (one for each finger) and one length section to help place the thumb. An eight-sided cylinder forms the finger base. Next, I copy and position the four fingers as instances, so I only need to work on one of them. The thumb is a copy (not an instance), as it will be a different shape to the fingers. Each finger's object scale is adjusted to resemble actual finger sizes; object transforms won't affect the instancing here.

The hand is shaped and smoothed by adding edges with the Connect tool. The wrist is extruded from a hole in the end of the box and shaped. I add more detail to the fingers, such as three edge loops around each joint to aid deformation, and the fingernails which are created by extruding four fingertip polygons downwards to create a recess, then upwards and beyond the fingertip's length to create the nail.

Edges are cut into the hand to form knuckles and accommodate the extra edges we will need to attach the fingers and thumb. Once the hand and thumb holes are matched to the finger and thumb ends, I delete the Cap polygons on the fingers, and begin attaching them one by one and collapsing the points to seal the gaps. Finally I subdivide the hand and fine-tune the shape and topology (**Fig.08**).


08



09

Legs, Feet and Shoes

The finished hands are attached to the arms and the edges are joined. Her legs are made by extruding them downwards, then adding and scaling edge loop sections to shape them. You can see the development of the foot in **Fig.09**.

The foot profile is extruded from the leg edges and built up by capping the polygons, and then cutting new edges on the sides. The shoe is made from a separated extrusion of her sole, and two edited poly strips for the straps. The toes are cut edges that are extruded inwards and shaped. The toenails are made the same way I made the fingernails.

Next, I spend some time fine-tuning the body with Soft Selection/Point Manipulation until I am happy with the shape of it.

Clothes

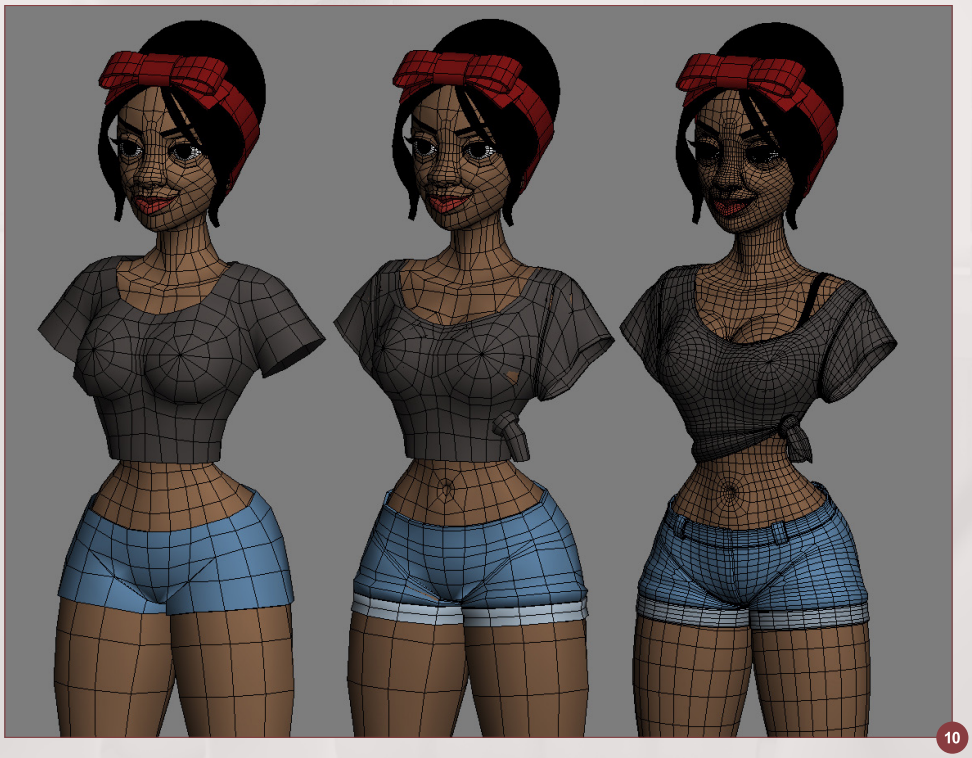
Now that I am happy with the body, I can start modeling the clothes properly. I start by clone detaching two polygon selection groups from the base body and assigning simple materials. These selections should represent the boundaries of the clothed areas. I add a Push modifier to inflate these new objects away from the body slightly, and add a Shell modifier to them to add thickness. I now begin adding detail by moving, cutting, extruding and chamfering edges. I don't worry too much about detailing the back, as we will never see it.

The belt loops on her hot pants are made with separate poly strips. When I am happy with the t-shirt, I collapse the Symmetry modifier and begin to make it asymmetrical. I pull it over one shoulder and create a bunched up area with a knot, like in the reference photo. The knot is made from two modified cylinders. I make a bra strap from a poly strip (with a Shell modifier on) to give a bit of layered detail.

Fig.10 shows the progression of her clothes, with her arms hidden to make it easier to work with.

Finishing up the Model

The last thing to do is the hair and the bandana. Using previously covered techniques I make the rear hair strips, add a Shell modifier, then edit and sharpen them to give them a chunky, sculpted feel. The bandana is given creases and the knot is remade to look better. Again, I use poly strips with a Shell modifier on. The eyebrow



10



11

polys are clone detached, given a thickness, and shaped. The eyes are made into a 'death star' shape by extruding and curving the colored part inwards.

Fig.11 shows the un-subdivided and subdivided wireframe of the finished head, hair, eye and bandana.

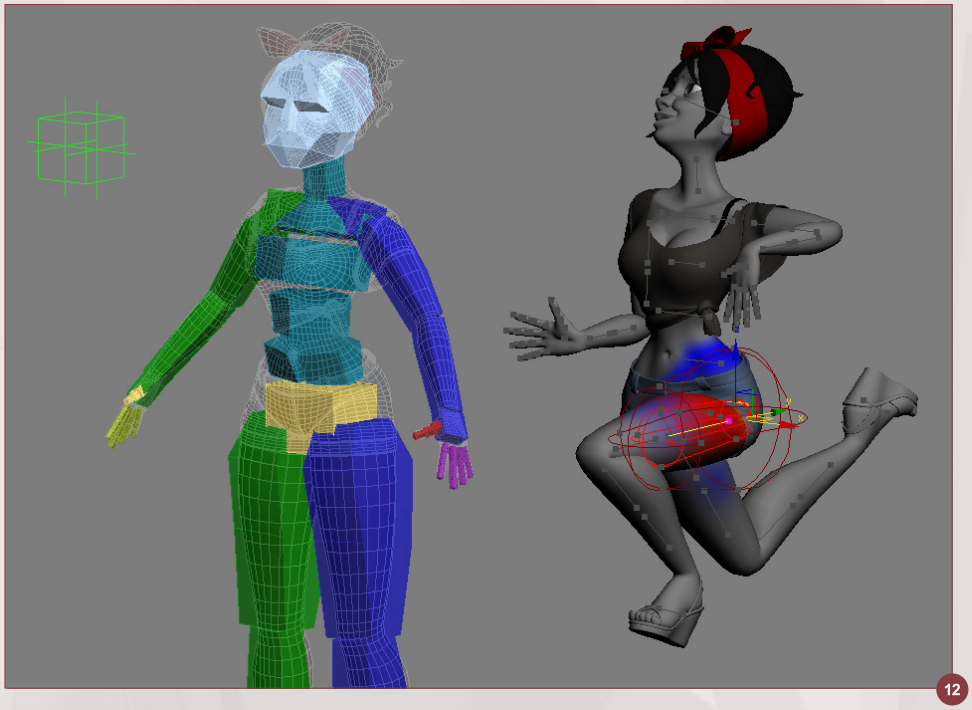
Rigging and Skinning

I like to rig/skin my models as soon as I'm done modeling, so I can check proportions, shapes, and to do some test poses to see if I need to change anything on the model. I create a 3ds Max Biped rig and position it at the center of the grid. In Figure mode, I adjust the rotation and scale of the limbs to match the model, and then apply a Skin modifier to the meshes, assigning them to the relevant bones. I keyframe some test/calibration poses and adjust the skinning envelopes until I'm happy with it.

Two null/point objects parented to a dummy object have been used as look-at rotation targets for the eyes, and then parented to the rig's head. **Fig.12** shows the Biped rig in its resting pose with the mesh wires overlaid on top, and it also shows my calibration pose with the thigh's skin envelope being adjusted.

Conclusion

That's it for part one! Feel free to experiment with proportions and shapes; this is just a guideline to how I made this specific character. You can adapt these steps to begin most human characters of varying styles and levels of detail (**Fig.13**).



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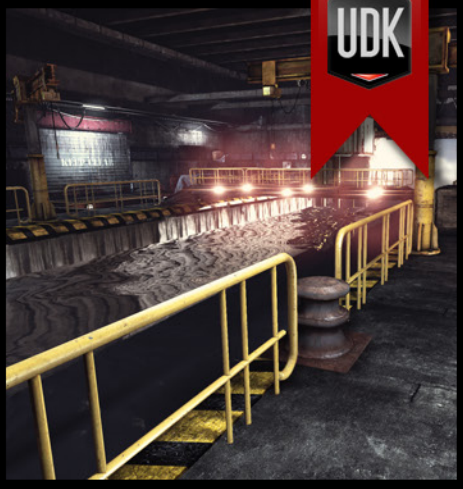


13

In the next part, I will cover UV'ing, texturing, lighting, the creation of the background and the composition.

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Email: andyh3d@gmail.com





In the modern world so many things seem to become popular and then disappear just as quickly as they arrived, however the games industry has proven itself to be ever present and continues to develop and thrive. For any CG artist the games industry continues to be the most obvious and abundant form of employment, but taking the step from a modeler to creating a games level at a professional standard is no easy task. In this series of tutorials industry professional Andrew Finch will be talking you through how to make a very cool playable games level using the Unreal Development Kit. Whether you are looking to create a cool portfolio piece or just looking for a fun project to try, this tutorial series is perfect for you.









THE SUBMARINE PEN

CHAPTER 05 - BUILDING OBJECTS AND PLACEMENT

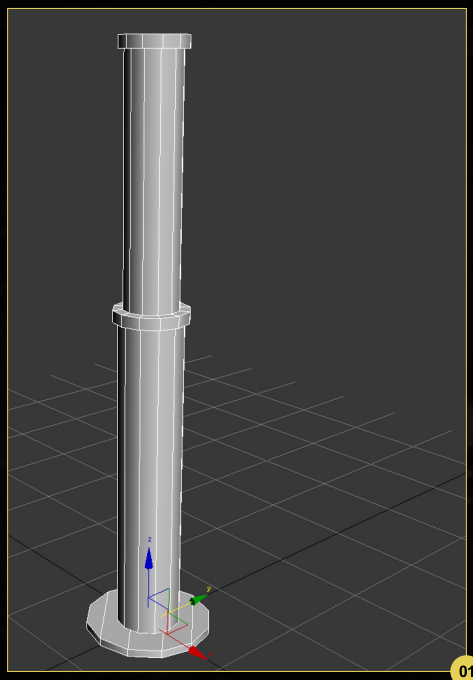
CHAPTER 05 – BUILDING OBJECTS AND PLACEMENT

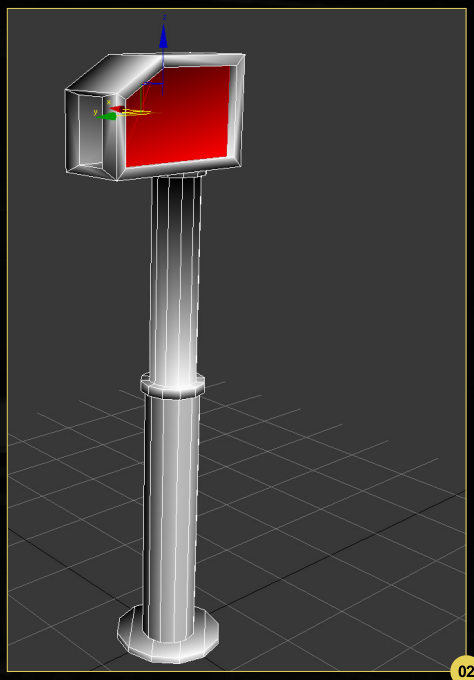
Software used: UDK, 3ds Max and Photoshop

Welcome to the fifth part of my tutorial series in which I'm guiding you through the creation of an environment built in the games engine UDK, from the concept to the completion. This is an intermediate level tutorial and you should have at least basic knowledge of the software used. This tutorial is about the bigger picture of creating an environment; I won't be focusing on creating an amazing asset, instead I will be giving an overview of the process of creating the whole environment.

In the last chapter we started to populate the environment with existing objects that are available in the UDK Asset Browser library. We cannot create the whole environment from already existing assets; we need to make custom assets to suit the type of environment we want to create.

I stated in the last chapter that I encourage you not to use any existing assets for a portfolio piece. You should always use your own work when showing potential employers what you are capable of doing. I only used existing assets due to the time restrictions of creating the environment for this tutorial. Also this tutorial is about creating the whole environment, so I can't go into much detail about how I created the models and textures; if I did then this would be one epic tutorial!


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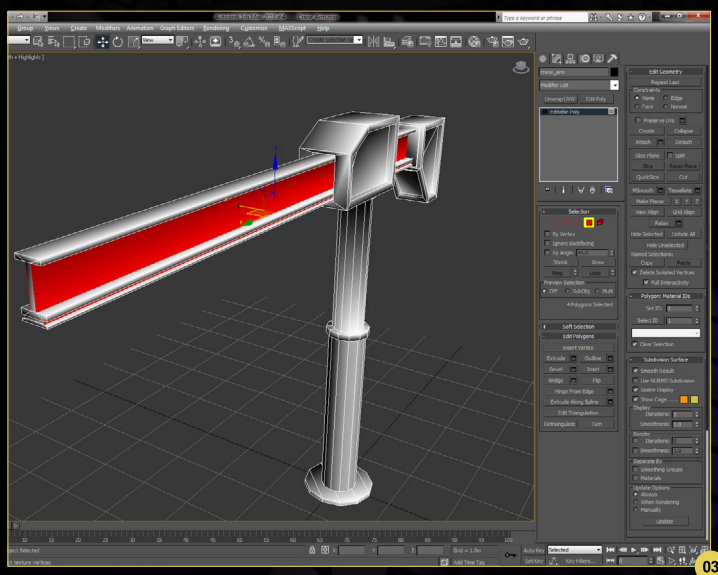
You should be able to import assets into UDK as this is a more advanced tutorial; my previous tutorials cover this process in more detail. I need to cover a lot of ground, so we'll keep it simple to follow, but all the assets for this tutorial will be included and available to download.

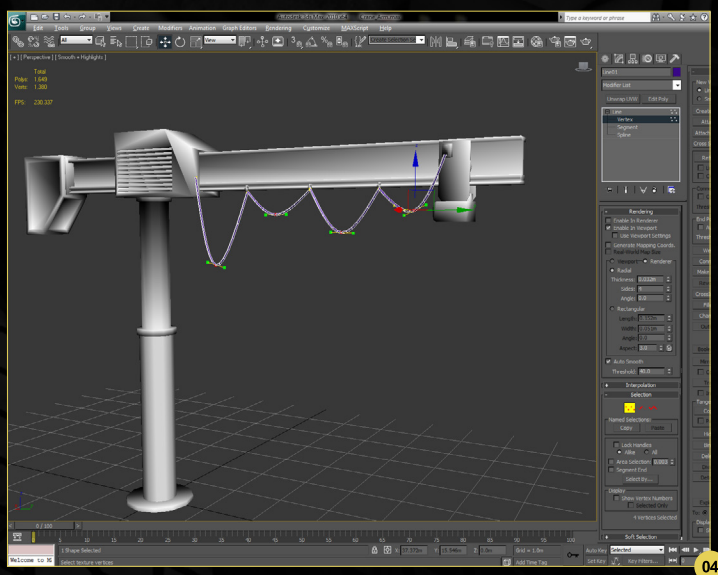
CRANE

To start us off I created a small crane that sits along the side of the water's edge (**Fig.01**). The crane geometry is very simple and mainly created from primitives. The base of the crane is made from a cylinder with bevels and extrusions to add little details.

Fig.02 – 03 show the main body of the crane, created from a box primitive and simple face extrusions and bevels to add some surface detail to the geometry.

To create the wires on the crane I turned on geometry in the viewport and used splines; this gives us 3D geometry that we can attach to our crane model. I used Bevel Curves to create the curves of the wires, so it looked like it was hanging naturally (**Fig.04**).


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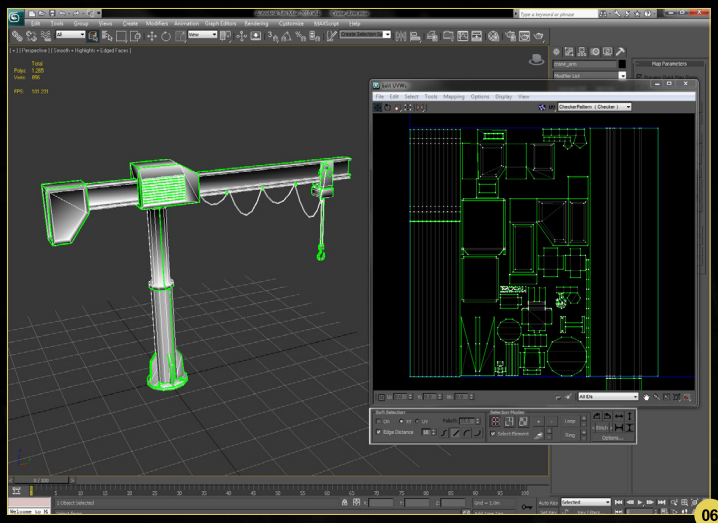
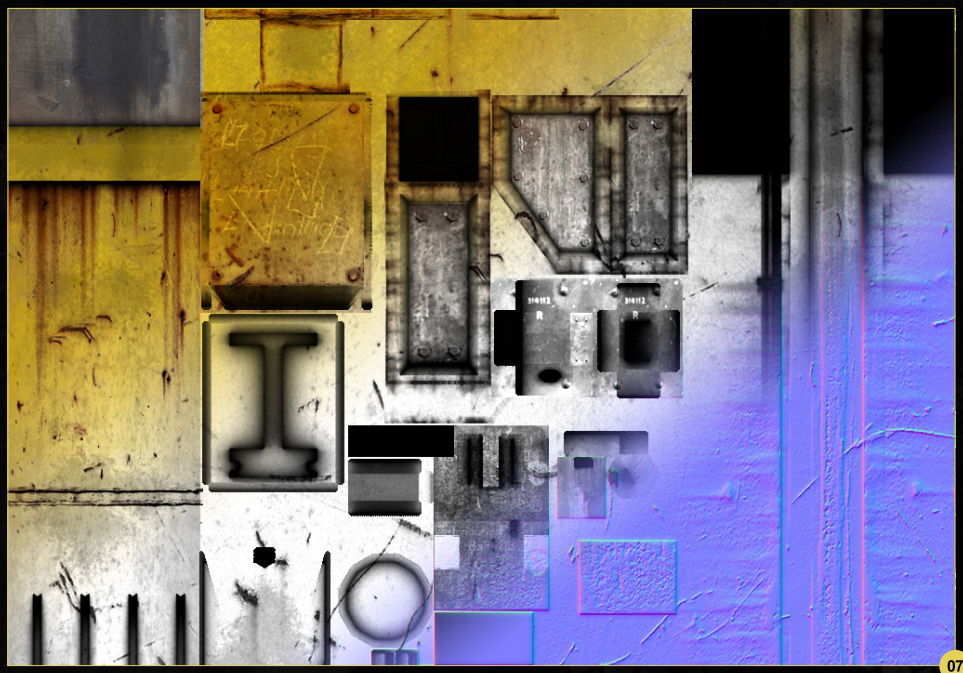

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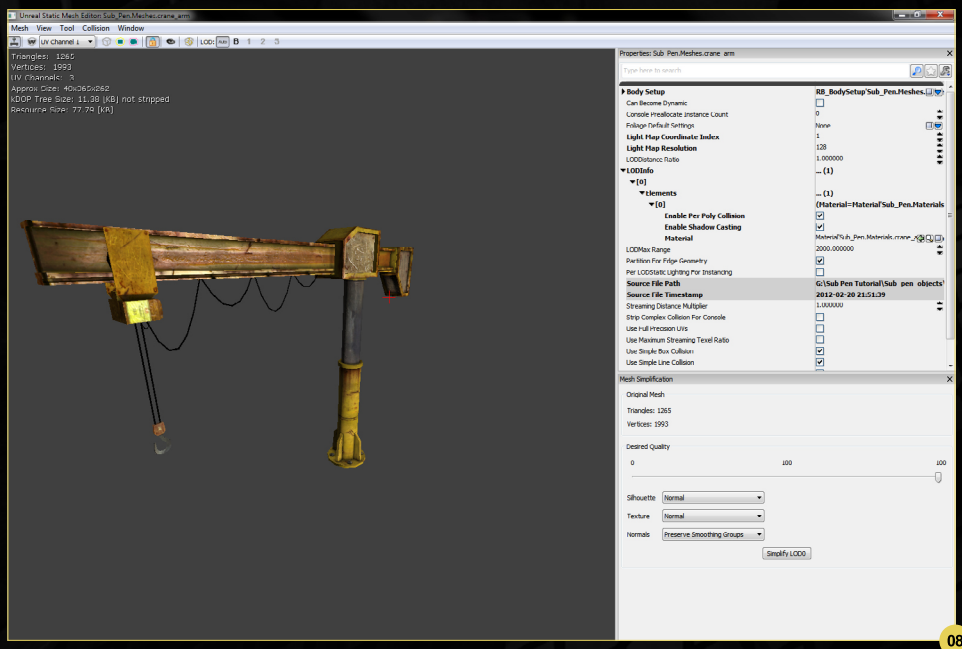
Fig.05 shows the finished model. As you can see it has very simple geometry due to the time restrictions of this project. You should take more time when creating your assets, so you can show off your best work in your portfolio.

I UV-mapped the whole asset to one UV map and saved the UV render, so I could then bring it into Photoshop ready for the texturing process (**Fig.06**).

Fig.07 shows the finished Diffuse, Spec and Normal maps ready to be imported into UDK and applied to the model.

In **Fig.08** you can see the finished asset in UDK; the model has been imported, as well as the textures. A material has also been applied to the asset and it is now ready to be placed in our environment.


07


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BARREL

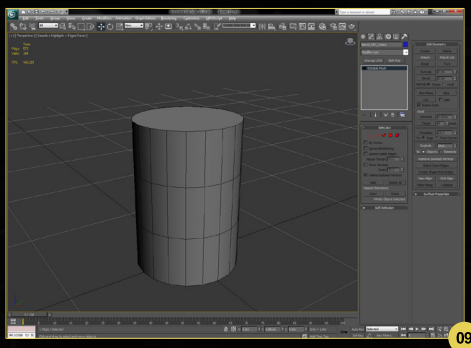
The barrel can be created the same way as the crane. I used a simple primitive cylinder with edges that are chamfered in order to add the detail, and then I scaled up the looped edges to create lips around the surface of the barrel. Next I moved the vertices slightly in order to create a banged up, dented look, as I wanted this barrel to look used and old. I also mapped the UVs to one texture page ready for texturing.

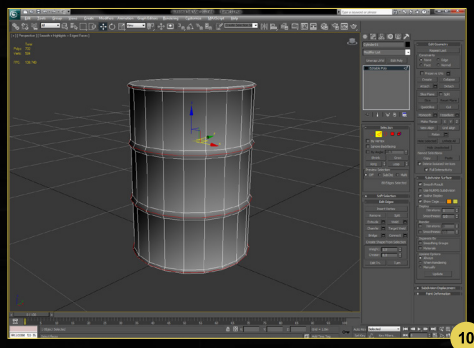
In **Fig.09 – 12** you can see the process behind the creation of the barrel's geometry.

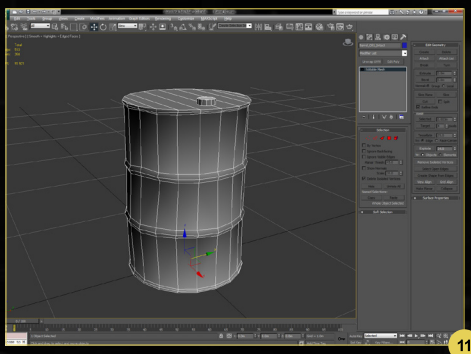
The textures for this barrel were created to further emphasise the banged up, used barrel look I wanted to go for, so the diffuse has a lot of rust detail, which was also added to the Spec and Normal maps. As this is a game barrel asset, it is usually customary for it to be red (**Fig.13**)!

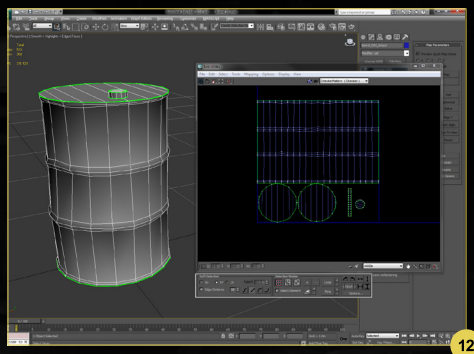
Fig.14 shows the finished barrel asset imported into UDK and ready to be placed in the UDK environment.

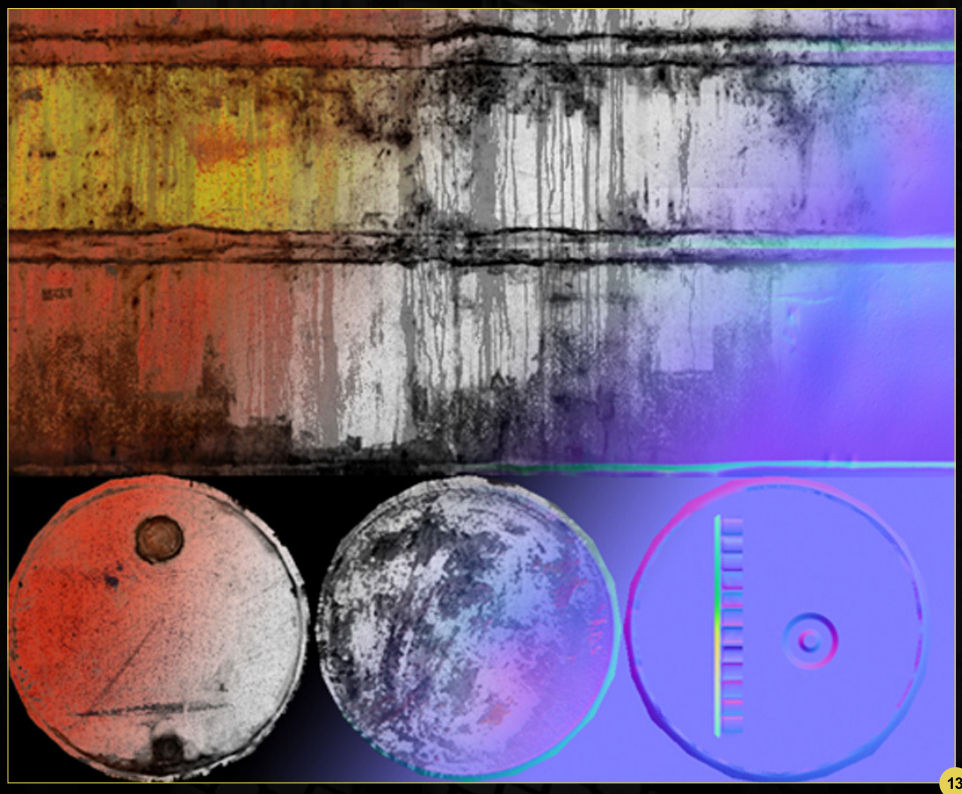
I had two more finished assets that were ready to be placed in our environment: railings and an overhead crane. **Fig.15 – 16** show the completed assets. They were created the same way as the barrel and original crane.

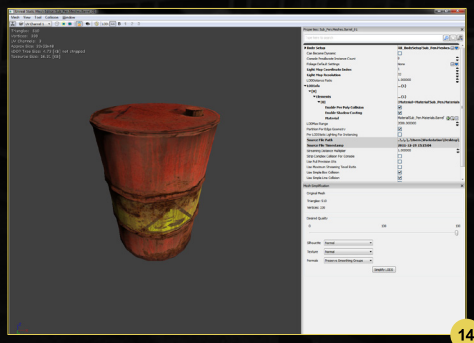

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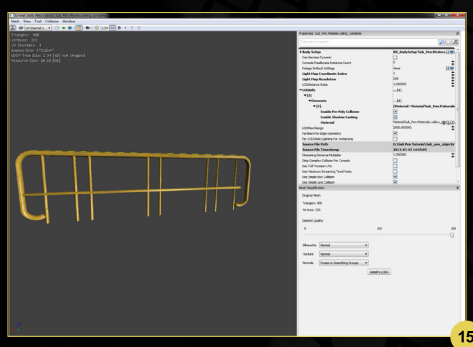

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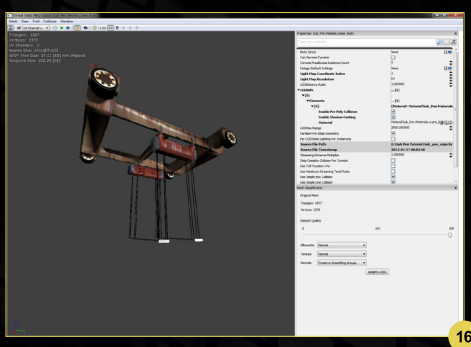

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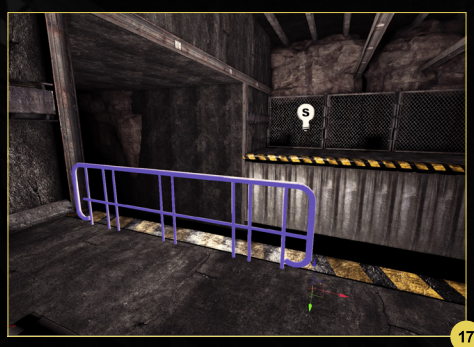
PLACEMENT

I started with the railing object, as this was quite an important part of the environment. It would be used a lot and have a lot of influence in the composition of our environment (**Fig.17**).

I started at the start of the left platform and dragged a railing asset from the Asset Previewer

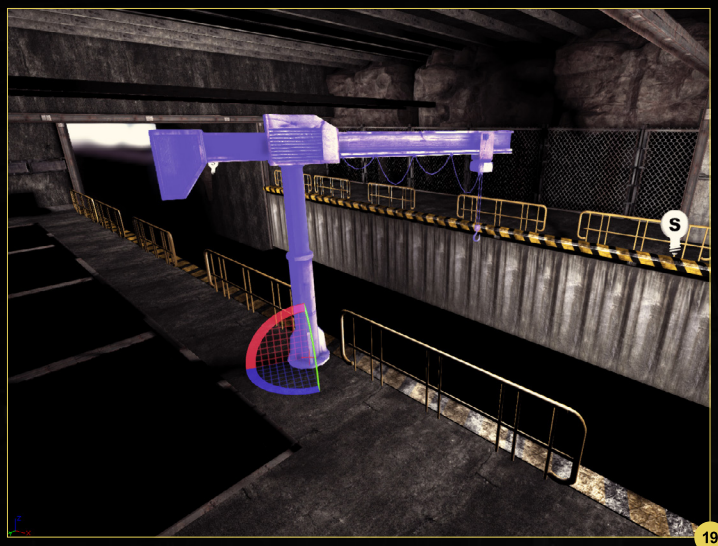

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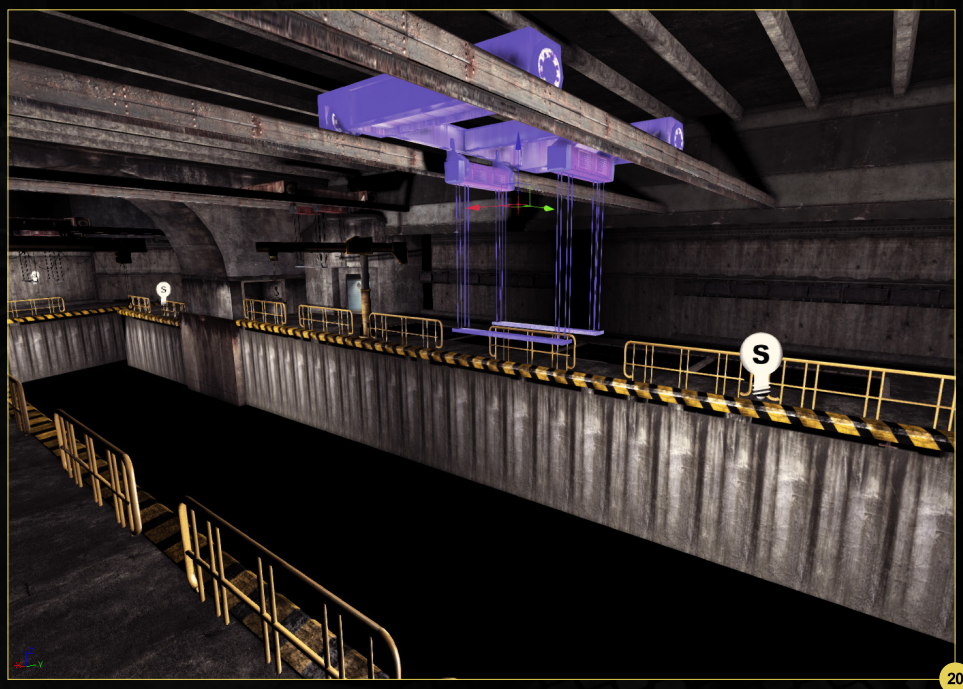
into position. I then used the Translate gizmos to move the asset more accurately into position. I then duplicated the asset all the way along the platform and on the other side (**Fig.18**).

This is just a first pass on the placement; it will continually be tweaked as more objects get placed in the scene and until we are happy with the final composition of the environment.

I placed a crane near the water's edge and between two railing assets. I also duplicated the asset and placed one on the opposite side. Be sure to rotate these assets so they aren't straight to give them a more natural placement and the illusion of them being used (**Fig.19**).

The overhead crane was used twice in the environment. I placed it along the metal beams that travel across the width of the submarine pen. I made sure the wheels were sitting in the grooves of the beams, so it looks like the crane can easily travel back and forth along the beams. I placed this asset in each room (**Fig.20**).

To finish off the placement for this chapter, I placed the barrels randomly around the environment. I tried to group them together and place them in an interesting way, such as on their side, and made sure to rotate each one, so they all look different from one another and are more naturally placed (**Fig.21 – 22**).



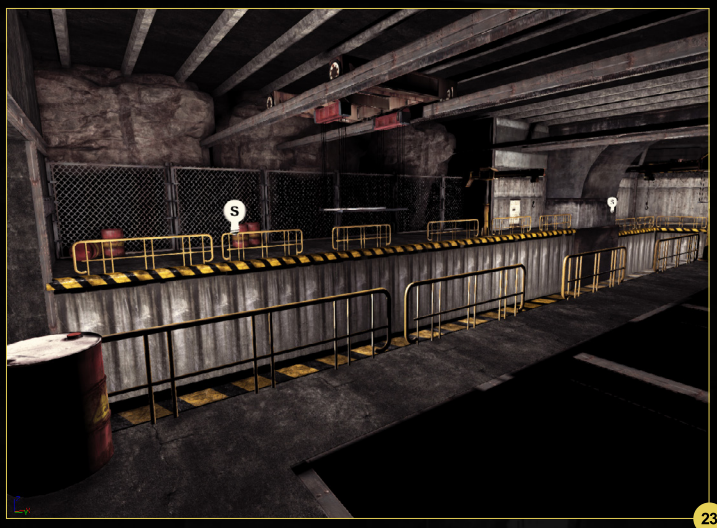
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22



23

I did a draft lighting calculation using the three temporary lights previously placed; this gives us a rough look at what the finished environment may look like.

Fig.23 – 24 show the finished placement for this chapter. I'm quite happy with the placement at this point, but it is all a first pass for now, so it can change as we start to drop in more assets.

In the next chapter I will finish the placement of all the objects. I will also cover a useful technique for creating some convincing cloth assets to really tie your environment together and add the extra level of detail and believability.

The environment is already starting to come together now it has started to be populated with assets, and by the end of the next chapter it should look very busy and close to the final look we want to achieve. So until the next chapter I encourage you to play around with the placement and build as many relevant assets as you can. Thanks for reading.

ANDREW FINCH

Email: afinchy@gmail.com

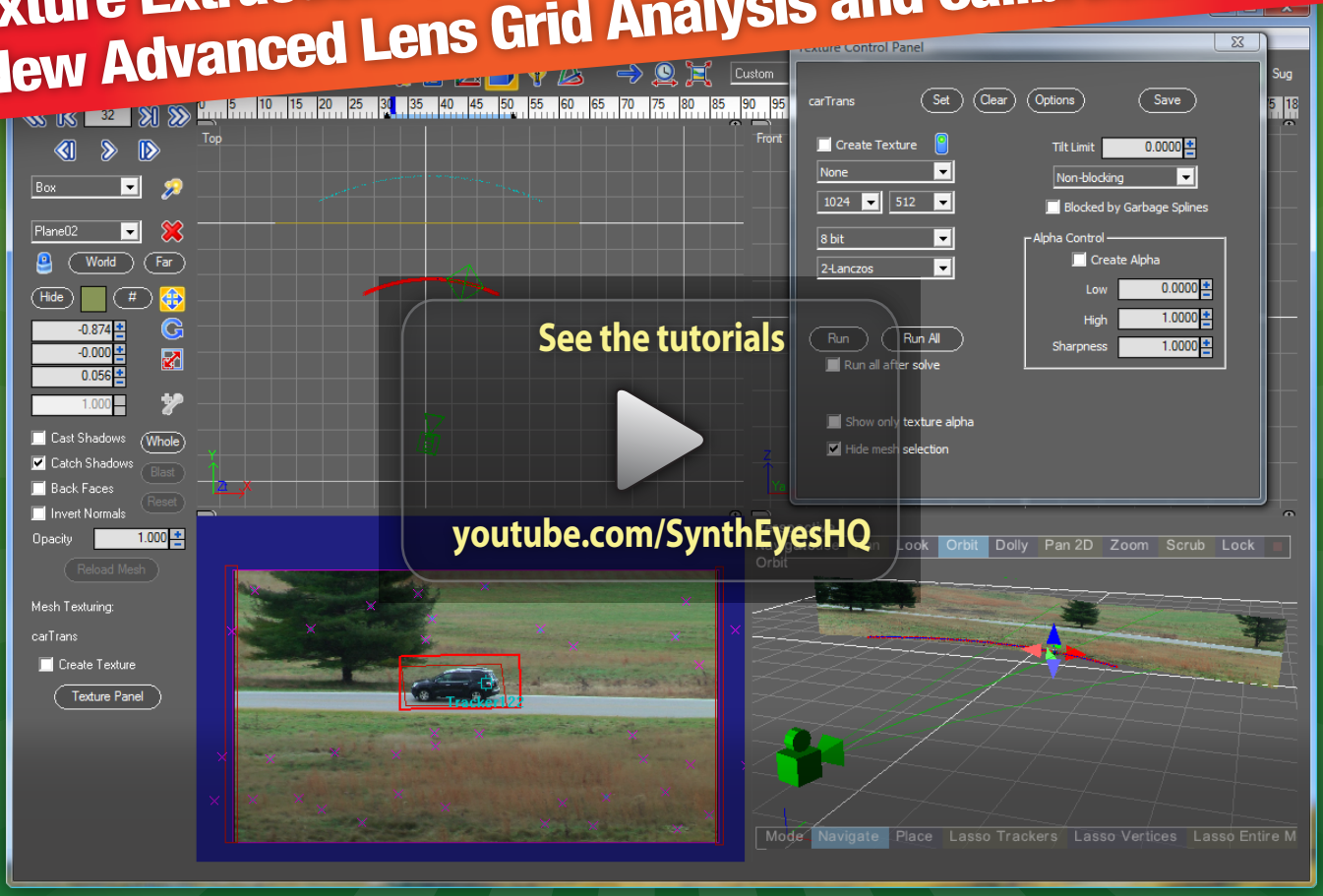


24

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ZBRUSH

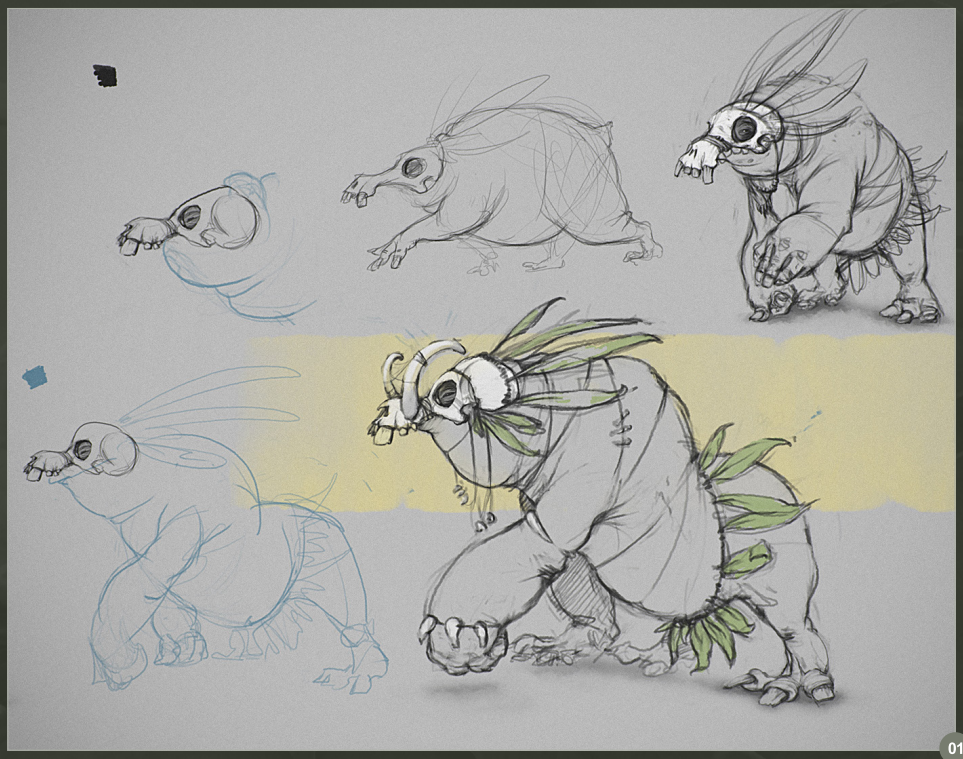
QUADRAPEDS

ZBrush is a formidable piece of software that is capable of so much. The possibilities are endless and the only restriction is your imagination. In this series our brilliant artists have been given complete creative freedom to show us how to create the organic forms of their quadrapeds. They will cover everything from concept through to final illustration and will show us how to create some brilliantly imaginative quadrapeds!

CHAPTER 02

Software used: ZBrush

I started with some fast sketches of what I had in mind (**Fig.01**). I already had a few ideas about some of the features I wanted on the creature, so I included these in the sketches. These were things like the skull mask, beads, robe, leaves and the overall voodoo feeling. At this stage I try to not work on one sketch for too long, but rather explore and try different proportions, creating many fast and loose sketches and silhouettes.



01

When I come to a point where I'm clear about what I want, I continue working directly in 3D, where it's easier for me to understand and visualize the creature's forms and proportions.

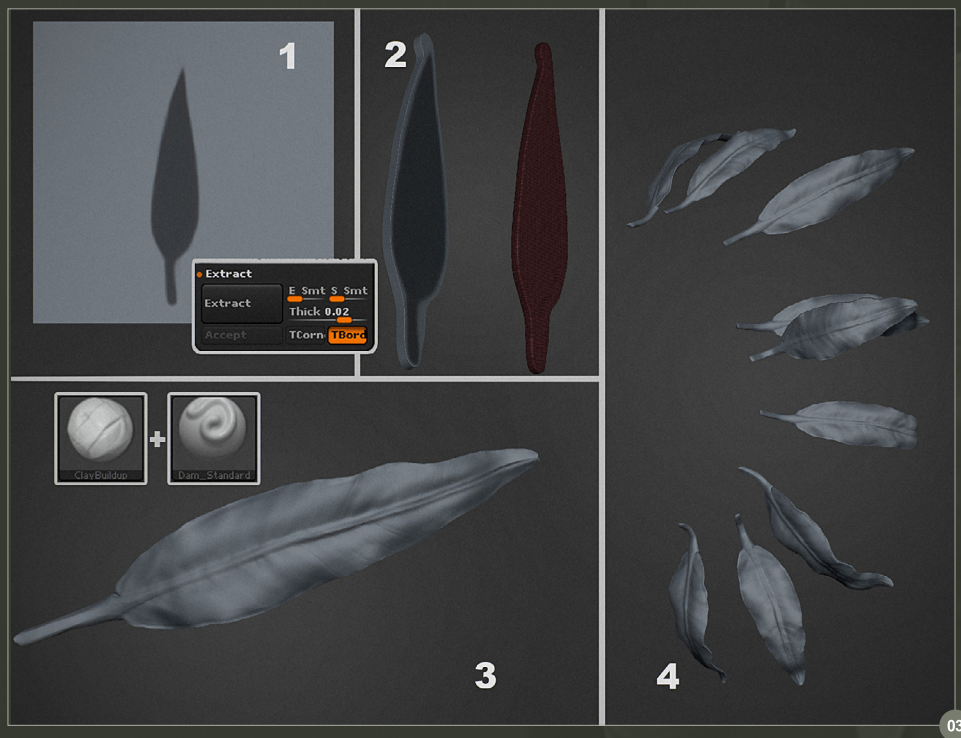
So at this point I moved to ZBrush, where I used ZSpheres to build the body of the creature and then continued to DynaMesh it.

The coolest thing about DynaMesh is that it is super-fast for creating concepts and exploring your ideas directly in 3D. At this stage I tried not to stick to my concept too closely, but rather developed it further. I worked on a big scale, mainly with the Move and ClayBuildup brushes, set to a larger brush size. I tried not to spend too much time on one part of the model, but to move across it and develop it evenly (**Fig.02**).



02

Also using DynaMesh, I created really fast and simple meshes for the leaves, skull and the tusks, as these elements play an important role in the creature's silhouette and it's better to keep them in mind while working on the body.

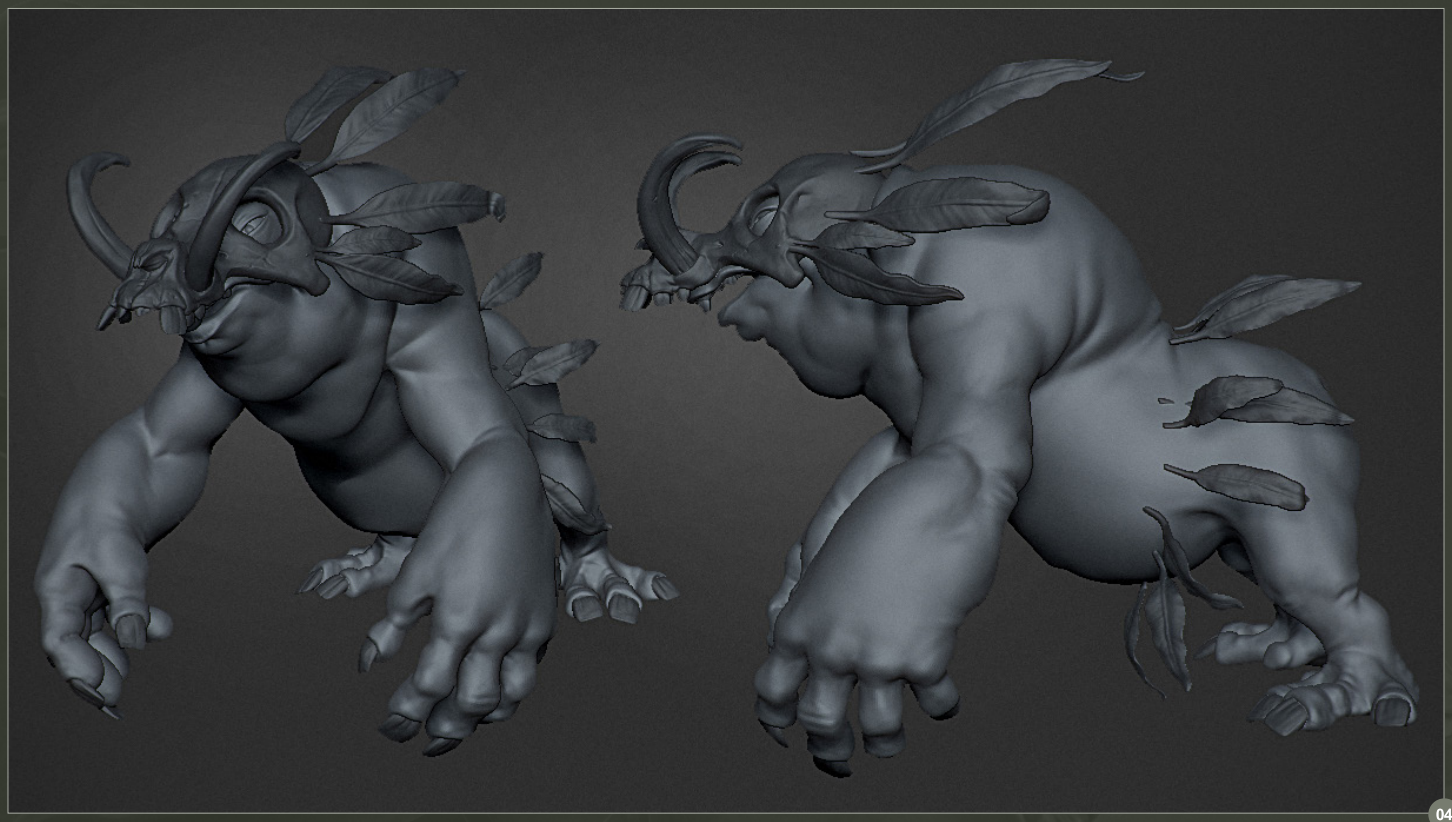


03

I used quite a simple technique for making the leaves. I created a plane where I masked an area to look like a leaf and then, using Extract set to a low thickness, I created a mesh from the mask. I then DynaMesh'ed and copied (Ctrl + drag while in TransPose mode) across the areas where leaves will appear (**Fig.03**).

I created the skull from a sphere with a DynaMesh and to begin with I used the CurveTube brush for the tusks, then I used DynaMesh to detail them further.

With all the main forms in place, I continued working on the body. At this point I still refrained from adding in smaller elements yet, such as the beads and robes, as all the small meshes would make posing the model quite difficult.



04

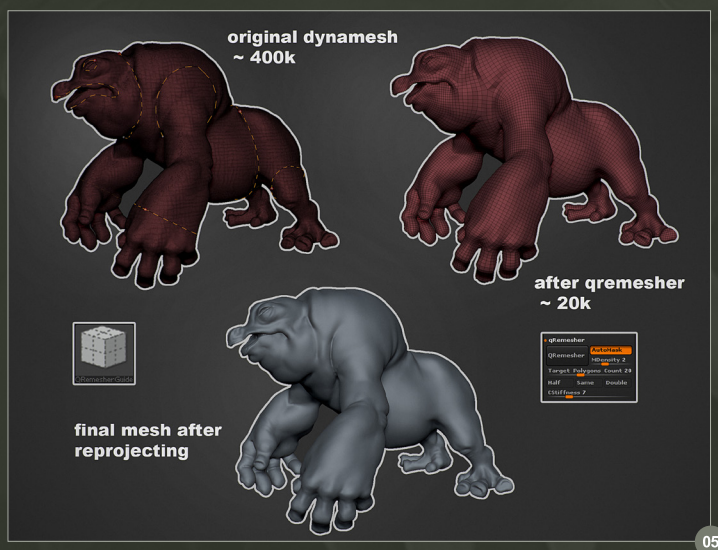
Plus, these kind of elements all have a different polygon density, so it is best to add them when the model is in its final pose (**Fig.04**).

While moving to a smaller detail and up on the resolution slider of the DynaMesh, it starts to get harder to make bigger, more global, changes and extremely hard to pose the model when the time comes.

So at some point I duplicated the mesh of the body and I drew some lines that would guide the new topology using the QRemesherGuides brush. After typing in the desired final poly count I QRemeshed it, which created a less dense mesh with topology more suitable for posing and UV mapping if needed. The last thing left to do was to subdivide it several times and to Reproject back the details from the previously duplicated mesh (**Fig.05**).

With all the major forms and objects in place, I started posing the model with Transpose Master, which involved masking and moving parts of the mesh with the Transpose tools, with some adjustments with the Move and Move Topological brushes. One thing that makes the posing a lot easier is to have the close polygon density on all the subtools of the model, otherwise the masks get sharper where there are more polygons and softer where there are less (**Fig.06**).

While working on the pose I tried to keep in mind the final view, so that all the important details would be visible as much as possible.



05

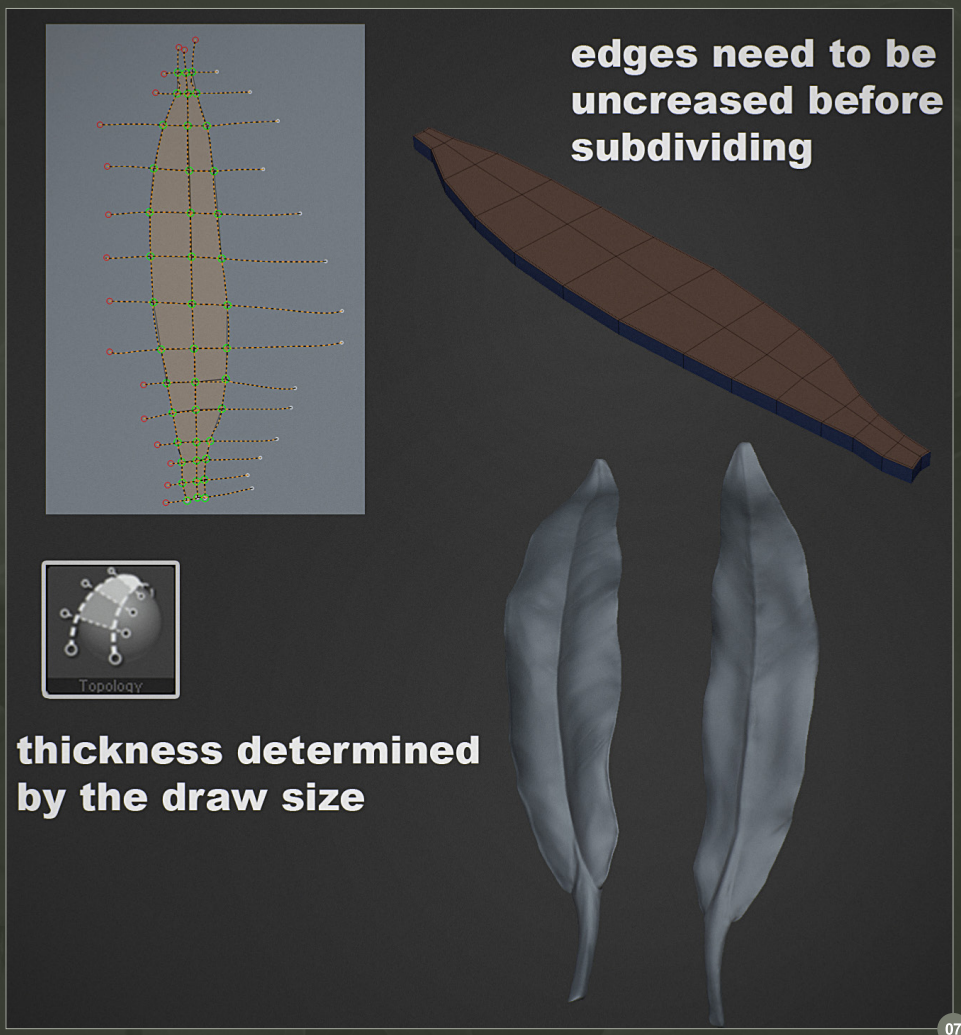


06

When I was finished with the posing, I started breaking up the symmetry, adding all the little elements and also detailing the existing ones. Here I created all the final leaves using the Topology brush, and all the teeth and bones using the plane masking method (**Fig.07**).

For the robes I used the CurveTubes brush again, and by holding the Shift key when moving away from the surface they snapped to the mesh while also enclosing it. Then I adjusted their thickness by changing my brush size and clicking on the curve.

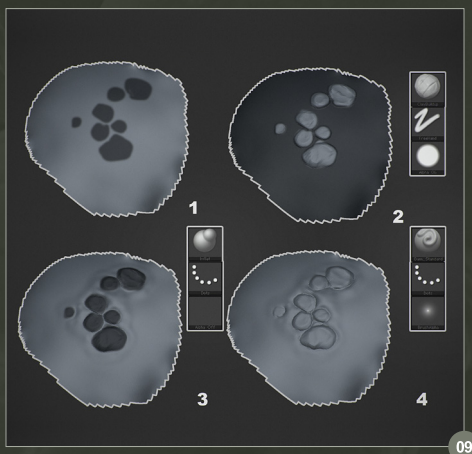
Working on the fingers, especially those on his arms, was quite difficult because they are so close together. I needed to make a separate polygroup for each of the fingers; Ctrl + clicking on a finger separated it from the others, making it a lot easier to work on. I did this by isolating the fingertip first, because it was easier to select, then I hit Grow in the Visibility tab until the entire finger was visible. I then used Group Visible to group the entire visible part of the mesh and repeated this for the other fingers (**Fig.08**).



07



08



09

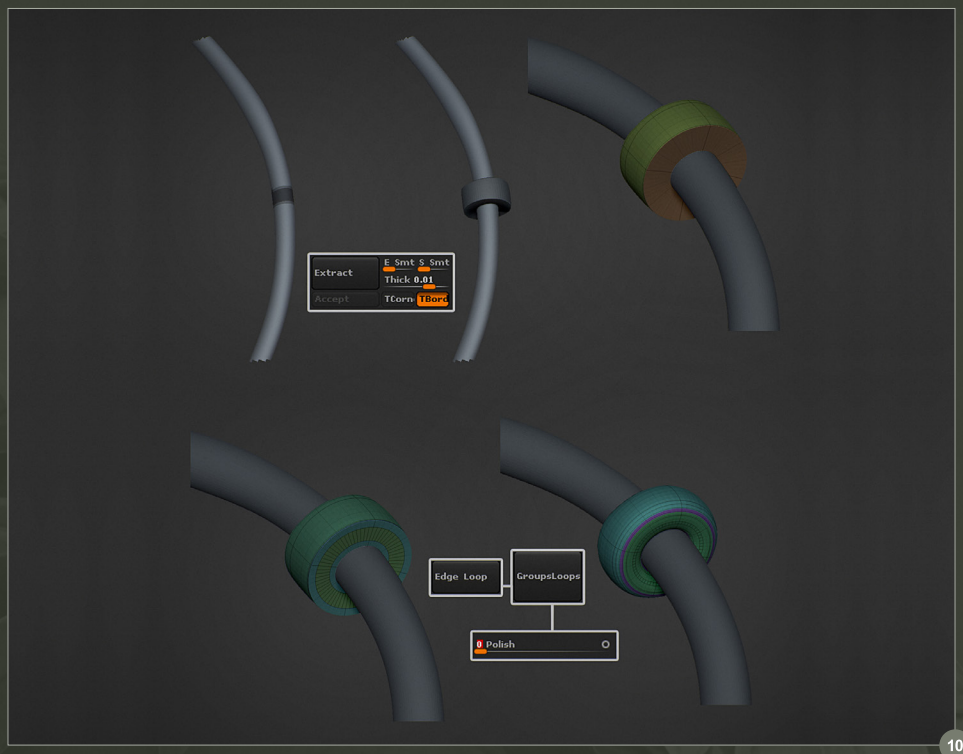
A large area on his shoulders and back appeared to look too bare and boring to me, so using the MaskLasso tool I masked some spots into clusters, and then made these harder details on his back to make it a bit more interesting (**Fig.09**).

For the beads, I masked thin parts of the robe where I wanted them to be and then, again

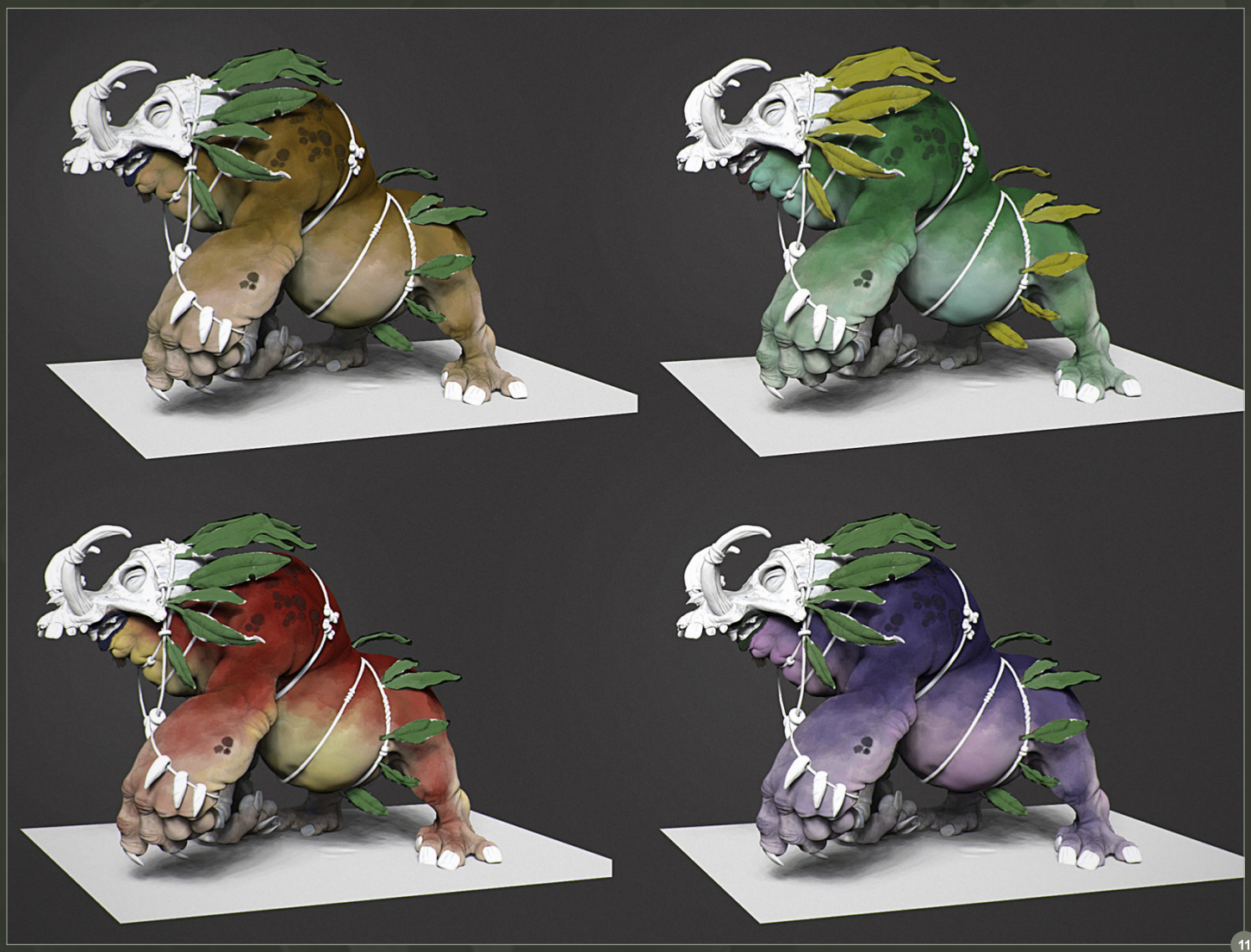
using the Extract and Edge Loop tools combined with GroupsLoops, I created them one by one (**Fig.10**).

For the finest details I mostly used the Dam_Standard brush in combination with the ClayBuildup and Pinch brushes, with the brush modifier around 40 and alpha 37-38 from the default ZBrush alphas. At this point I was trying not to spend too much time on one area and overdo it, but to keep moving across the model and detail it evenly.

My approach to the texturing is the same as my approach to modeling: moving from the largest to the smallest detail. I first started by rendering the whole model with a white Matcap material and then moved to Photoshop, so I could quickly test different color schemes (**Fig.11**).



10



11

When I was satisfied I moved back to ZBrush, filled every subtool with its base color according to the sketch and from there I started adding color variations and more detail.

At the beginning of the texturing I mostly used a brush with the DragRect stroke and some spray alphas, such as 07 or 08, to create base color variations. I then moved to the smaller detail with a spray stroke, again with these two alphas, and the freehand stroke for the finest details. At the end I dragged in some alphas I'd made from photos to enrich the texture. Mask by Cavity and by PeaksAndValleys are also really powerful tools here. I tried to put some cold and warm areas in the texture and also some gradients to make it look more interesting.

I started the rendering by saving a custom view in the ZAppLink first, so I could be sure that all my passes were from exactly the same view. Then I began rendering the passes, starting with two BPR renders of the textured model. I filled these with the SketchShaded2 material, with a slightly lowered cavity detection; one with Vibrant Shadows and AO turned on, and one with it turned off. I did this because it seemed to have too strong an effect in some areas, so I wanted to mask them out where needed.

Then I switched to a basic material, turned off all of the Polypaint information and picked out black in color. With this setup I started rendering all the extra lighting for the scene by playing with light, color, intensity, placement and the specularity and specular curve of the material (**Fig.12**).



12

I also made masks by filling all of the subtools with flat color and changing the Inactive Subtool Dimming in the preferences to Minimum.

The compositing of the final render was done in Photoshop. I used my masks to select and color correct each one of the elements of the image, with a Color Balance adjustment layer, to make them look more consistent. Then I added all of the extra light passes above, switched to Linear Dodge blending mode and lowered the opacity where needed. The final touch was painting some subtle effects and adding a bit of a lens blur using the ZDepth pass from BPR.

BORISLAV KECHASHKI
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"One specific element of my idea was to make an old alien that differs only slightly from a human, so it looks less alien and more mysterious."

MAKING OF YITIO ITLANACHA

In this month's Making Of, Daniil Alikov will be talking us through how he made his stunning image of an elderly alien in ZBrush, from the initial concept stage, through to texturing and lighting.

YITIO ITLANACHA

Software used: ZBrush

Hi! My name is Daniil Alikov and I'm going to tell you how I created my Yitio Itlanacha artwork. In fact, the initial idea was just to do another anatomical sculpting training exercise in ZBrush. Then I realized I want to create an old alien and that was how the final idea was conceived.

With great help from my wife Sofiya, we created a sketch of the character. Actually she was painting while I was commenting, inventing and trying to figure out the look of the creature. So I want to thank my lovely wife very much. I wouldn't have been able to paint a concept as cool as she did!

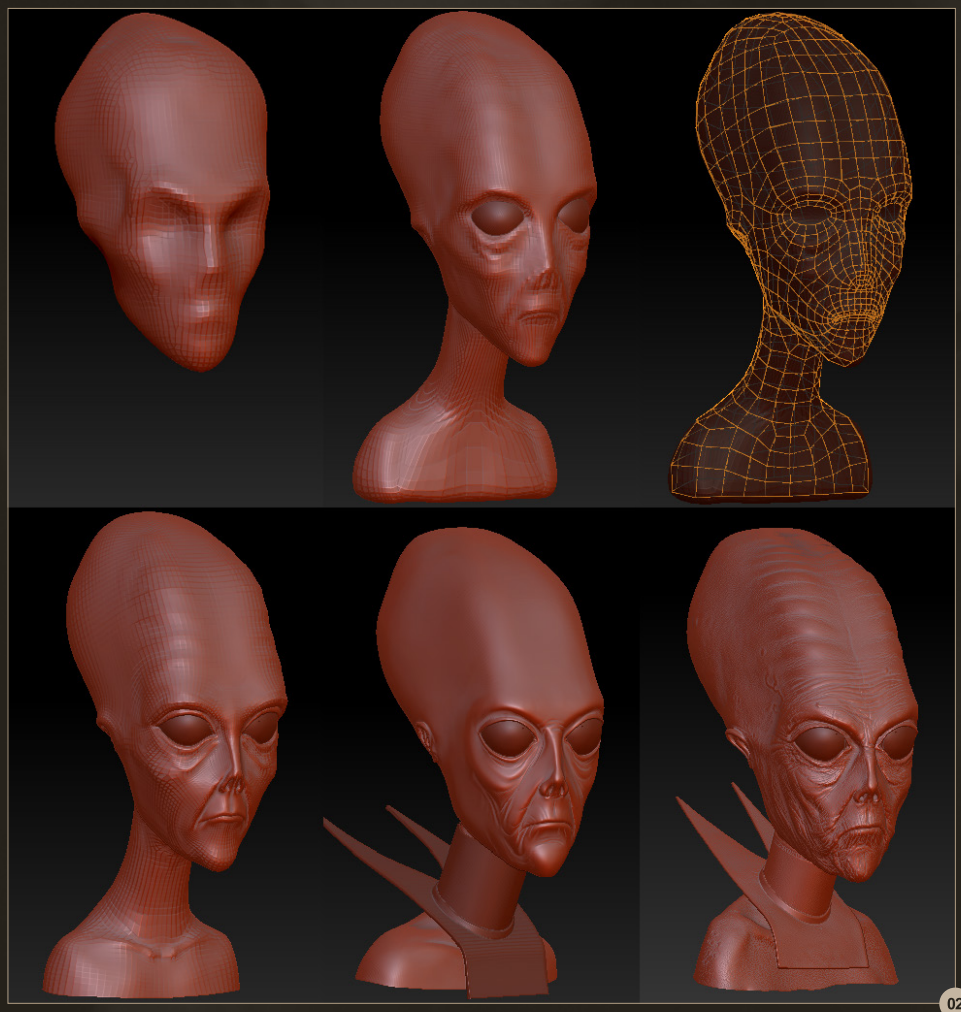
One specific element of my idea was to make an old alien that differs only slightly from a human, so it looks less alien and more mysterious. Also it should appear to be female in gender, which is not always obvious for aliens (**Fig.01**).

Once the sketch was done, I saved some reference photos of old people from the web and was ready to start sculpting. As I had planned it out before I began, I started the model from a sphere primitive, which I converted to a DynaMesh. I positioned my point of view as it was in the sketch. For the sake of optimizing and saving time, I decided not to make anything on the invisible side of the model. This option is one of the great advantages of working on a still image.

I then blocked out the shape of the head and outlined basic proportions. I was moving towards an increasingly complex shape. At this stage I kept the DynaMesh geometry at a low resolution level while I did multiple rebuilds. After I shaped out all the main forms, I retopologized my mesh



01



02



03

to have the right edge flow on the model for detailing further. I also unwrapped UVs of the new mesh. I continued sculpting with a nice and clean topology (**Fig.02**).

For wrinkles I used standard brushes as well as the Dam_Standard brush. I moved from the main folds of skin to smaller pores and imperfections, such as moles etc. Generally speaking, sculpting in ZBrush took me the most time whilst working on this picture (**Fig.03**).

Once I was done with the modeling, I proceeded to the coloring stage. I put basic colors first; these were really soft, basic colors showing light and dark tones, which also represented the overall color scheme of the character. Then I overlaid some skin maps on top of this foundation in Photoshop. I also used a cavity map baked in ZBrush and some additional hand-painted maps, which helped me to create specular and scatter area maps (**Fig.04**).

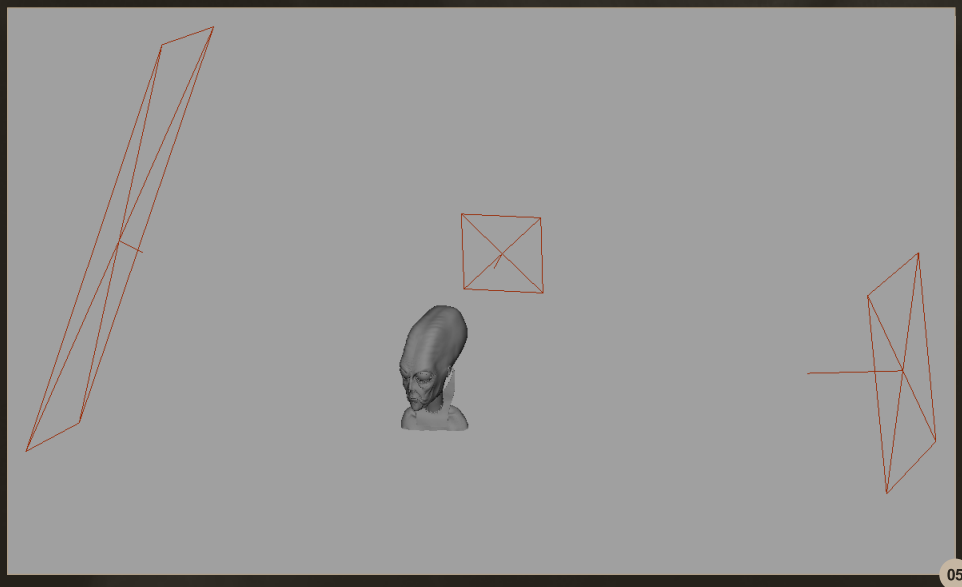

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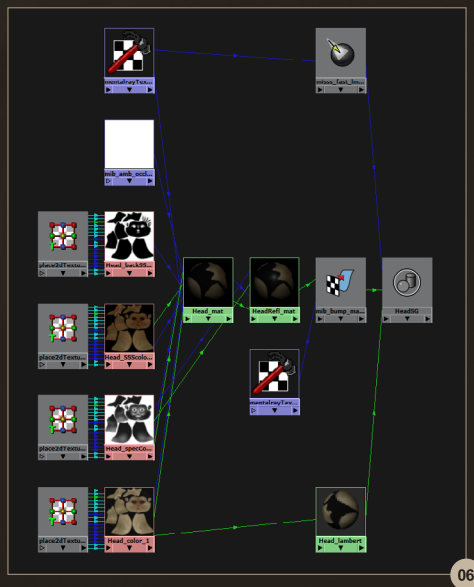
To achieve the desired result I usually tweak my texture maps and shader settings instead of tweaking existing light sources.

In this scene I rendered geometry as it was exported from ZBrush on the highest subdivision level. I don't like to mess with displacement shader settings in mental ray, as well as exporting displacement maps, which take a long time. So in the end I had a poly count of about four million in my scene. I could afford that amount because it was the only object to be rendered and I wanted to get exactly the same result as I'd sculpted in ZBrush.

Even though I already had my texture maps done, I set up the lighting in the scene with gray material applied to the geometry. It helps to see the effect of light more clearly, as well as balancing different light sources with each other. I used three area lights in my scene; key light, fill light and rim light. It is pretty much a classic approach to lighting the portrait. I spent a bit of time finding and positioning the proper HDR image around the model to get the desired reflection in the eye (**Fig.05**).

Skin shading on this character is based on misss_fast_skin material. For speculars and reflections I used mia_material_x. As you can see on the shading network in **Fig.06**, I used four texture maps connected to different channels of shaders, as well as a bump map connected through the mib_bump node. The ambient_occlusion node output is connected straight to the misss_fast_skin overall color channel.


05


06

The settings of the skin material itself are pretty simple. The most important thing was to find proper settings in the Algorithm control panel. The effect depends on the scale of the model in the scene space (**Fig.07**).

At the point of multiple test renders, tons of shader and texture tweaks, it is really important to have a desired final image in mind, so you don't do any work that could be done later in the compositing stage. It is also better to make an overall workflow plan at the beginning of a new project to optimize your efforts and save a lot of time. With types of images such as Yitio Itlanacha, I rely on compositing very much. It is another advantage of working on still images; lots of things can be fixed or even added in compositing software after the final render.

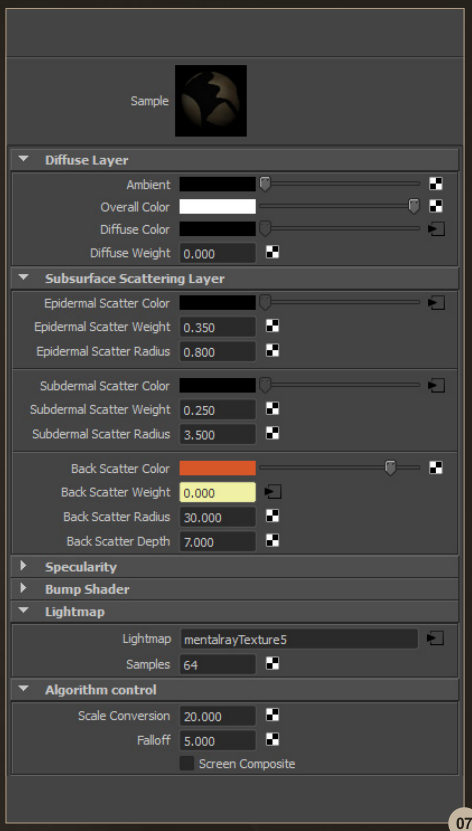
As I mentioned before, I connected the Ambient Occlusion node right to my skin shader, so I didn't need to render the AO as a separate render pass as I do usually. I rendered only two passes: Beauty and Z-Depth (**Fig.08**).

The render time for the Beauty pass was about 12 hours for an image size of 2500 x 3000 pixels.

After that I composed my image in Photoshop. I used a Lens Blur filter to add a depth of field effect to the portrait. I also applied a Lens Correction filter to add chromatic aberration. To finalize the image I added a vignette and background texture (**Fig.09**). That's it!

Thank you for reading. I hope you've found something useful in this Making Of.

DANIIL ALIKOV
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07


08




Image Courtesy of Ali Zafati
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QEV

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3DTotal Publishing
Sample Chapter

Qev

Software used: 3ds Max

Introduction

Qev was conceived as an internal R and D project at our character art studio Slide. He was primarily the result of an exercise in creating a face that was believable, yet entirely imagined. However, as we always try to squeeze the most out of our internal projects, one of our other main aims with Qev was to produce a model that would look great at both mid-distance and in extreme close-ups. This is something often requested for cinematic jobs where shots are always subject to unexpected, last minute changes.

As art director/artist on the project (working with the co-founder of Slide, Robin Deitch, who helped formulate the technical approach) I knew from the start that I wanted Qev to be an anti-hero from UK youth culture with a sci-fi twist. I wanted him to display all the stereotypical traits affiliated with the strata of UK culture known as "chavs", but also wanted to subvert these with a few elements that would make the character sympathetic. I decided that these elements would primarily be conveyed through the design of his face, which we wanted to be realistic, but entirely imagined so as to give us maximum creative control over his appearance.

The wish to create a realistic face, yet one that was still full of character, was both an ongoing personal goal and something Slide as a studio had seen a greater demand for in the games industry as we moved towards the end of the current generation cycle and into the next one. Generally in our current console cycle detailed human characters have commonly been developed in one of two ways: illustrative and hyper-real (usually based on concept art) or actor photo/scan-based and "photoreal". Each of these methods has strengths we wanted to tap into and weaknesses we wanted to try and avoid.



01

In the case of the more illustrative approach, the strength lies in the ability to convey a lot of personality and have full creative control over the look of the character. However, going down a strictly illustrative approach means characters can end up looking archetypal and lack subtlety and depth. On the other hand, in the case of an actor/scan-based approach you can achieve wonderfully subtle results, but are restricted by the look of the actors you cast. This, in turn, limits your creative choices and you run the risk of ending up with a "death mask" quality once the character is in the game.

Modeling

So our goal was to develop our skills and techniques for the purposes of realistic human facial design and harness the strengths of both these methods. Qev was our first full production character created using this process; an approach we have since fine-tuned and successfully used across multiple AAA projects coming out over the next year or two. The process relies on observation and artistic judgment, so it is not something that can be conveyed in a tutorial. At a high level though the key to it lies in learning the bounds, limitations and constants of the human face in real-world terms, and developing an instinct for how to bend these rules to achieve a specific result without destroying the illusion of realism.

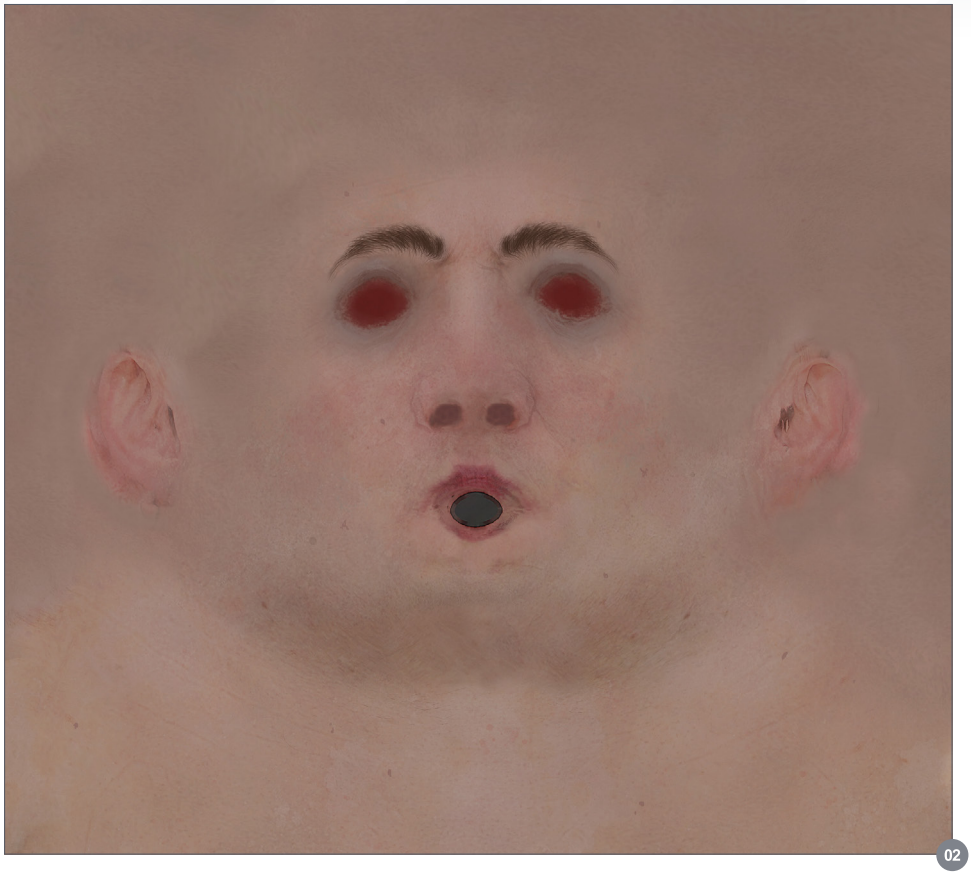
A key to our approach, which helps the process, is to get broad color information on a head model as early as possible and regularly create renders under varying lighting conditions using

appropriate shaders as we sculpt (**Fig.01 – 02**). This helps to catch areas and features that may have become too extreme during the sculpt or that need a little more "TLC" to really sell them.

This process took several days on Qev as it was my first attempt at formulating my approach into a repeatable, production-ready technique. Once this was done we had a face and likeness around which we could start to build the character.

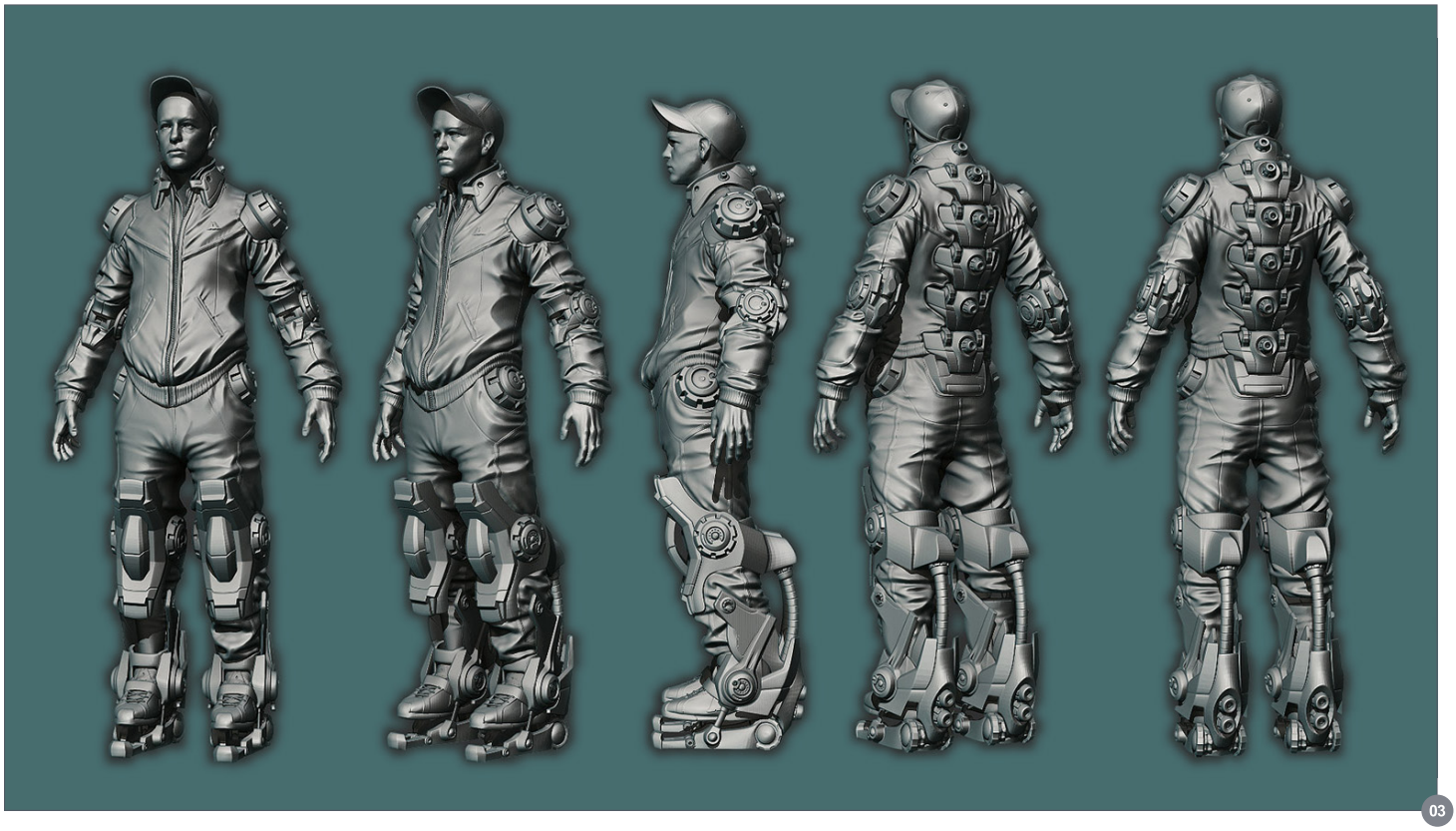
For his costume design we decided to develop the idea of sports leisure wear by clothing him in a tracksuit and incorporating a cybernetic exoskeleton used to augment running (presumably from the police while carrying a recently "discovered" HD TV). This contrast of cloth and hard surface structures would allow us to test out a pipeline for multiple high resolution texture tiles across both displaced and subdivided geometry, as each have their own specific requirements and foibles (**Fig.03**).

When sensible UVs had been assigned and we could apply a measured checkerboard map, it became clear that we'd need to spread the UVs over a number of pages to maintain the desired texel resolution, whilst keeping individual textures at a workable size in Photoshop.



02

Materials in 3ds Max can usually only take a single bitmap as a texture input, but we wanted to avoid duplicating our shader networks to handle the multiple source textures.



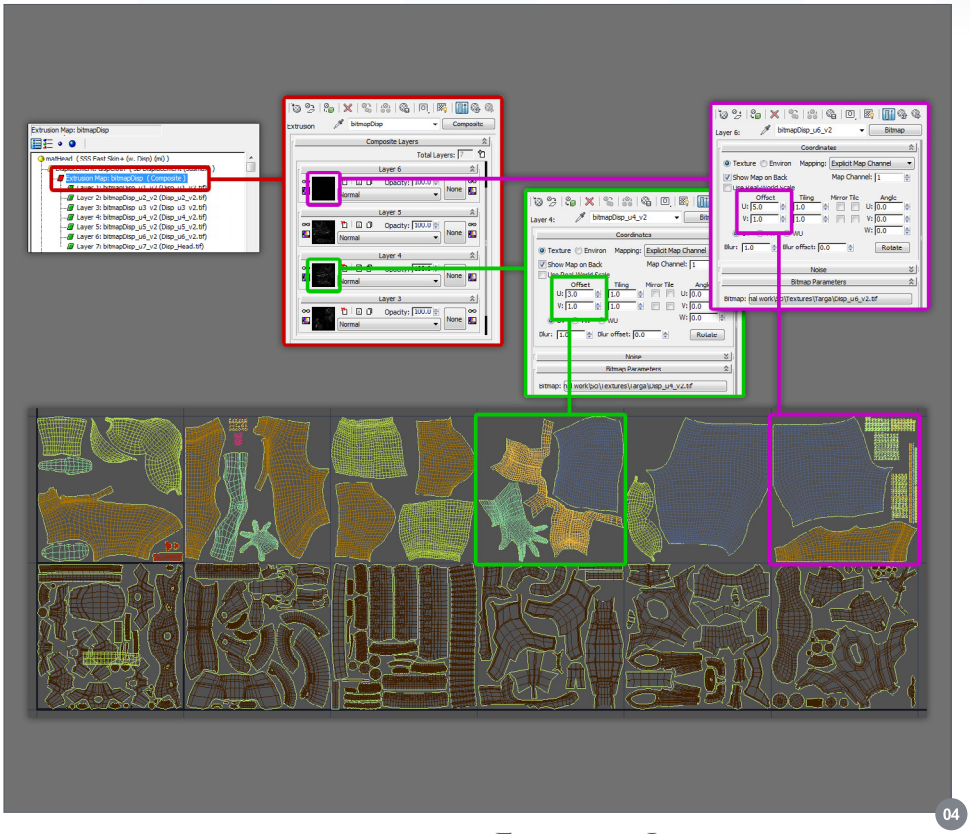
03

Consequently, we laid out the UVs to cover multiple tiles (0-1, 1-2 etc in UV space) and used a Composite texture node, along with the Offset controls of each referenced bitmap node, to assemble the individual source textures (bitmapDisp_u4_v2 etc) into a single “mega texture” (bitmapDisp).

Instances of this mega texture could then be plugged into a material in the same way as a traditional single-map texture (**Fig.04**).

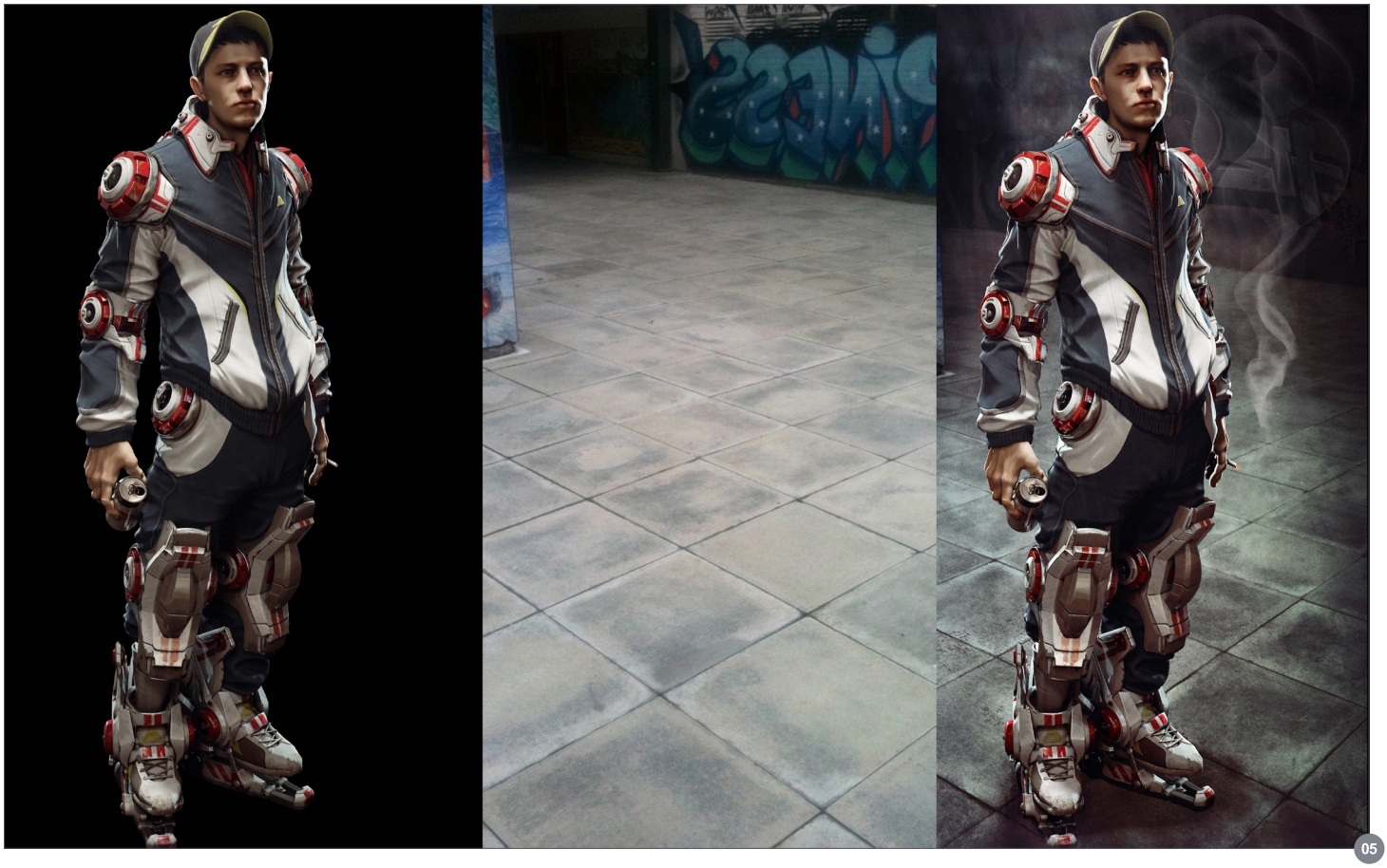
Once this was done we set up a fairly straightforward mental ray scene with area lights and Final Gathering. We ignored passes on this occasion and just rendered out a final render of Qev with an alpha channel in order to composite him into a fairly abstract photo of an urban environment taken in the area around our studio, which is in Old Street, London, England (**Fig.05**).

With some final color balancing, hand-painted environment effects and smoke rising up from his cigarette, as well as the addition of his favorite alcoholic beverage, Qev was complete and ready to cause trouble.



04

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05



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